AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	77

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0002	JUL. 19, 2002	N/A	SPEC. NO. 1190

6. ISSUED BY CODE

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, SACRAMENTO
SACRAMENTO, CALIFORNIA 95814-2922

7. ADMINISTERED BY *(If other than Item 6)* CODE

DEPARTMENT OF THE ARMY
US ARMY CORPS OF ENGINEERS,LOS ANGELES DISTRICT
P.O. BOX 532711
LOS ANGELES, CALIFORNIA 90053-2325

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE FACILITY CODE

(√) X

9A. AMENDMENT OF SOLICITATION NO.
DACA05-02-B-0003

9B. DATED *(SEE ITEM 11)*
N/A

10A. MODIFICATION OF CONTRACTS/ORDER NO.
N/A

10B. DATED *(SEE ITEM 13)*
N/A

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

☒ The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers ☐ is extended, ☒ is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*
N/A

NOTE: ITEM 13 BELOW IS N/A.

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√)

A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.
N/A

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*
N/A

E. IMPORTANT: Contractor ☐ is not, ☐ is required to sign this document and return_____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

EFFLUENT RE-USE (PHASE 2)
FORT HUACHUCA, AZ

3 Encl
1. Continuation Page: SF30
2. Revised Pages: Frontend Table of Contents, Frontend (Page 1, 2, 2A, 5thru 5G, 10,19, 47, 54, 81, 82, 83, 84, 87, 88, 101, 102, 103, 114, 152, 152A thru 152E, 158), Index of Attachments, Attachment #3, Attachment #4, Section 01270, 01505-5, Section 02316, Section 16370
3. Revised Drawings: G-6, G-9, 2-E-6, 3-SR-9, 3-SR-10, 3-SR-11, 3-SR-12

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

CONTINUATION PAGE
SF 30

AMENDMENT NO. 0002

DACA05-02-B-0003
EFFLUENT RE-USE (PHASE 2)
FORT HUACHUCA, AZ
SPEC. NO. 1190

CLARIFICATION NOTES:

1. Sheet 2-P-8: CARV @ Station 82+65 shall be installed on other side of curb.

2. Sheet 2-P-8 2" BO LT shown at Station 83+45.21 shall be connected at Station 82+00 and located on east side of road off pavement.

3. Sheet 6-C-1: Note 3 is deleted. All notes stating SEE NOTE 1 AND 3 are changed to state SEE NOTE 1.

4. Sheet G-7: Note 2 under LOADS is changed to include that ROOF LIVE LOAD IS 20 PSF.

5. Sheet 6-SM-3: Detail A Note stating #5@12" T&B HOOK TOP BARS DOWN AT SUMP is changed to state #5@12" T&B EW HOOK TOP BARS DOWN AT SUMP

6. Sheet 2-E-1: 15 kVA transformer is three phase.

7. Sheet 7-E-1: Location of existing substation is shown on sheet 2-E-3

8. Sheet 7-E-3: Location of existing substation is shown on sheet 2-E-3

9. Sheet 7-E-5: Detail 1 is for spare nema size 3 controllers shown on sheet 7-E-1

TABLE OF CONTENTS

NOTE: AS A MINIMUM ANY CONTRACT AWARDED AS A RESULT OF THIS SOLICITATION SHALL CONSIST OF THE FOLLOWING DOCUMENTS:

STANDARD FORM 1442, SECTIONS 00010, 00700, 00800, TECHNICAL SPECIFICATIONS AND DRAWINGS, AND ATTACHMENTS AS DESCRIBED IN CONTRACT DOCUMENT.

SECTION 00600, AS COMPLETED BY AWARDEE, IS INCORPORATED INTO ANY RESULTANT CONTRACT BY REFERENCE.

SECTION 00100 IS INCLUDED FOR SOLICITATION PURPOSES ONLY. THIS SECTION WILL BE REMOVED, MAINTAINED IN THE CONTRACT FILE AND NOT MADE PART OF THE CONTRACT.

AMENDMENTS ARE INCORPORATED INTO THE RESULTANT CONTRACT.

SUBCONTRACTING PLAN (IF REQUIRED) BECOMES AN ATTACHMENT TO AND A MATERIAL PART OF THE CONTRACT.

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. DACA05-02-B-0003	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 26-Jun-2002	PAGE OF PAGES 1 OF 163

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W62N6M-2148-7787	6. PROJECT NO.

7. ISSUED BY CODE	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, SACRAMENTO DISTRICT 1325 J STREET SACRAMENTO, CALIFORNIA 95814 TEL:(916)557-6933 FAX:(916) 557-5278	DEPARTMENT OF THE ARMY CORPS OF ENGINEERS, LOS ANGELES DISTRICT ATTN: Contracting Division C/O: Sandy Oliver-Hall P. O. Box 532711 Los Angeles, CA 90053-2325 TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME Ms. Cheryl Gannaway	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)* (916) 557-6933

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

Effluent Re-Use (Phase 2) @ Fort Huachuca, Arizona
Spec. No. 1190
Description: 1. Provide expansion of Fort Huachuca's reclaimed water distribution system. Work to include providing new pump at the waste water treatment plant, appox 10,000 feet of U.G. high-density polyethylene piping to various sites.2. Upgrade Fort Huachuca's Wastewater Treatment Plant (WWTP). Work to include providing new chemical addition coagulation system and expansion to existing UV disinfection system. 3. Upgrade WWTP Electrical Supply System. Upgrade WWTP electrical supply system by providing following: new 13.8 kV primary service, new padmount transformer, new switchboards, new emergency generator and new motor control center.4. Provide New Reservoir Covers: Provide new flexible geomembrane covers on the three separate reclaimed water-holding ponds. 5. Replace Damaged Sewer Mains: Work will consist of replacing approximately 6000 lf of sewer main.

NOTE : THIS PROJECT IS LIMITED TO 8A CONTRACTORS WHOSE APPROVED BUSINESS PLAN IS ON FILE WITH THE SBA ARIZONA DISTRICT OFFICE. ALL OTHER FIRMS ARE DEEMED INELIGIBLE TO SUBMIT OFFERS.

Estimated Cost Range: ***$5,000,000.00 to $10,000,000.00***

11. The Contractor shall begin performance within 10 calendar days and complete it within 300 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* FAR 52.211-10 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and 0 copies to perform the work required are due at the place specified in Item 8 by 13:00:00 *(hour)* local time ***7/30/02*** *(date).* If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)*
CODE / FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	**ITEM**	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return ____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*		31A. NAME OF CONTRACTING OFFICER *(Type or print)*	
30B. SIGNATURE	30C. DATE	31B. UNITED STATES OF AMERICA BY	31C. AWARD DATE

PRICING SCHEDULE

BASE SCHEDULE

CONTRACTOR SHALL FURNISH ALL PLANT, LABOR, MATERIAL, EQUIPMENT, ETC. NECESSARY TO PERFORM ALL WORK IN STRICT ACCORDANCE WITH THE TERMS AND CONDITIONS SET FORTH IN THE CONTRACT TO INCLUDE ALL ATTACHMENTS THERETO.

LINE ITEM NO.	DESCRIPTION	QUANTITY	UNIT OF MEASURE	UNIT PRICE	TOTAL PRICE
0001	Mobilization and Demobilization.	1	LS	LUMP SUM	$_____
0002	Process Modifications	1	JOB	LUMP SUM	$_____
0003	Wastewater Treatment Plant No. 2 Electrical Modifications.	1	LS	LUMP SUM	$_____
0004	Wastewater Treatment Plant No. 2 Effluent Reservoir Cover System.	1	LS	LUMP SUM	$_____
0005	Sewer System Rehabilitation. (Excluding Option Items Below).				
005AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	13500	LF	$_____	$_____
005AB	Sewer System Rehabilitation: Trench Stabilization.	100	TON	$_____	$_____
005AC	Sewer System Rehabilitation: Spot Repairs. (First 20 Feet)	65	EA.	$_____	$_____
005AD	Sewer System Rehabilitation: Spot Repairs. (Over 20 Feet)	750	LF	$_____	$_____
005AE	Sewer System Rehabilitation: Connection Rehabilitation.	20	EA.	$_____	$_____
005AF	Sewer System Rehabilitation: Manhole 3-14 Replacement.	1	LS	LUMP SUM	$_____

005AG	Sewer System Rehabilitation: Raise Manhole Frame and Cover.	3	EA.	$_____	$_____
005AH	Sewer System Rehabilitation: Install Manhole Riser Section.	6	LF	$_____	$_____
005AI	Sewer System Rehabilitation: Replace Shallow Manholes.	3	EA.	$_____	$_____
005AJ	Sewer System Rehabilitation: Construct Manhole 3-10B.	1	LS	LUMP SUM	$_____
005AK	Sewer System Rehabilitation: Install New 10-inch diameter Pipeline between Manholes 8-66 and 8-69.	1	LS	LUMP SUM	$_____
005AL	Sewer System Rehabilitation: Replace Existing Sewer Pipe w/PVC.	760	LF	$_____	$_____
0005M	Sewer System Rehabilitation: Line Existing Pipe w/Cured-in-Place Pipe.	330	LF	$_____	$_____
0005N	Sewer System Rehabilitation: Line Existing Pipe w/Cured-in-Place Pipe, Install HDPE by Pipe bursting Method; or Replace Existing Sewer Pipe w/ PVC at Contractor's Option.	3300	LF	$_____	$_____
	SUBTOTAL (Total of Line Items 0005AA Thru 0005N) (Excluding Options Below)			$_____	
0006	Reclaimed Water Distribution System Pipeline. (Excluding Options Below)	1	LS	LUMP SUM	$_____

0007	Storm Water Pollution Prevtion.	1	LS	LUMP SUM	$_____

TOTAL BASE PRICE $_____
(TOTAL OF LINE ITEMS 0001 THRU 0007)

OPTIONS

0008	(Option 1) Wastewater Treatment Plant No. 1 Effluent Reservoir Cover System.	1	LS	LUMP SUM	$_____
0009	(Option 2) Reclaimed Water Distribution System Pipeline Alignment 2, STA 51+50 to STA 97+24.02.	1	JOB	LUMP SUM	$_____
0010	(Option 3) Sewer System Rehabilitation Drawing 3-SR-2, window 3-SR-2-C.				
0010AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	1517	LF	$_____	$_____
0010AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	8	EA	$_____	$_____
0010AC	Sewer System Rehabilitation: (Over 20 Feet)	80	LF	$_____	$_____
0010AD	Sewer System Rehabilitation: Service Connection Rehabilitation.	5	EA.	$_____	$_____

OPTION 3 SUBTOTAL $_____
(TOTAL LINE ITEMS 0010AA THRU 0010AD

0011	(Option 4) Sewer System Rehabilitation Drawing 3-SR-3, window 3-SR-3-A.				

0011AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	2415	LF	$_____	$_____
0011AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	9	EA.	$_____	$_____
0011AC	Sewer System Rehabilitation: Line Existing w/Cured-in-Place Pipe.	590	LF	$_____	$_____
	OPTION 4 SUBTOTAL (TOTAL LINE ITEMS 0011AA THRU 0011AC				$_____
0012	(Option 5) Sewer System Rehabilitation Drawing 3-SR-3, window 3-SR-3-B.				
0012AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	393	LF	$_____	$_____
0012AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	1	EA.	$_____	$_____
	OPTION 5 SUBTOTAL (TOTAL LINE ITEMS 0012AA THRU 0012AB)				$_____
0013	(Option 6) Sewer System Rehabilitation Drawing 3-SR-4, window 3-SR-4-A.				
0013AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	2016	LF	$_____	$_____
0013AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	5	EA.	$_____	$_____
0013AC	Sewer System Rehabilitation: Line Existing w/Cured-in-Place Pipe.	1	EA.	$_____	$_____

0013AD	Sewer System Rehabilitation: Line Existing Pipe w/Cured-in-Place Pipe, Install HDPE by Pipe bursting Method; or Replace Existing Sewer Pipe w/ PVC at Contractor's Option.	397	LF	$_____	$_____
	OPTION 6 SUBTOTAL (TOTAL LINE ITEMS 0013AA THRU 0013AD)				$_____
0014	(Option 7) Sewer System Rehabilitation Drawing 3-SR-4, window 3- SR-4-B.				
0014AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	2430	LF	$_____	$_____
0014AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	16	EA.	$_____	$_____
0014AC	Sewer System Rehabilitation: Line Existing w/Cured-in-Place Pipe.	55	LF	$_____	$_____
	OPTION 7 SUBTOTAL (TOTAL LINE ITEMS 0014AA THRU 0014AD)				$_____
0015	(Option 8) Sewer System Rehabilitation Drawing 3-SR-6, window 3- SR-6-A.				
0015AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	1020	LF	$_____	$_____
0015AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	7	EA.	$_____	$_____
0015AC	Sewer System Rehabilitation: Service Connection Rehabilitation.	1	EA.	$_____	$_____

0013AD	Sewer System Rehabilitation: Raise Manhole Frame and Cover.	1	EA.	$_____	$_____
0013AE	Sewer System Rehabilitation: Install Manhole Riser Section.	2	LF	$_____	$_____

OPTION 8 SUBTOTAL (TOTAL LINE ITEMS 0015AA THRU 0015AE) $_____

0016	(Option 9) Sewer System Rehabilitation Drawing 3-SR-6, window 3-SR-6-B.				
0016AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	1284	LF	$_____	$_____
0016AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	9	EA.	$_____	$_____
0016AC	Sewer System Rehabilitation: Service Connection Rehabilitation.	1	EA.	$_____	$_____

OPTION 9 SUBTOTAL (TOTAL LINE ITEMS 0016AA THRU 0016AC) $_____

0017	(Option 10) Sewer System Rehabilitation Drawing 3-SR-6, window 3-SR-6-C.				
0017AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	867	LF	$_____	$_____
0017AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	3	EA.	$_____	$_____

0017AC	Sewer System Rehabilitation: Service Connection Rehabilitation.	1	EA.	$_____	$_____

OPTION 10 SUBTOTAL (TOTAL LINE ITEMS 0017AA THRU 0017AC) $_____

0018	(Option 11) Sewer System Rehabilitation Drawing 3-SR-7, window 3-SR-7-A.				
0018AA	Sewer System Rehabilitation: Cleaning and Closed Circuit Television Inspection.	1741	LF	$_____	$_____
0018AB	Sewer System Rehabilitation: Spot Repairs (First 20 Feet)	13	EA.	$_____	$_____
0018AC	Sewer System Rehabilitation: Spot Repairs (Over 20 Feet)	10	EA.	$_____	$_____
0018AD	Sewer System Rehabilitation: Raise Manhole Frame and Cover.	1	EA.	$_____	$_____
0018AE	Sewer System Rehabilitation: Install Manhole Riser Section.	2	LF	$_____	$_____

OPTION 11 SUBTOTAL (TOTAL LINE ITEMS 0018AA THRU 0018AE) $_____

TOTAL OF OPTIONS (TOTAL OF LINE ITEMS 0008 THRU 00018)	$_____
TOTAL PRICE (TOTAL OF BASE PRICE PLUS ALL OPTIONS) LINE ITEMS 0001 THRU 0018	$_____

1. Prices must be submitted on all individual items of this Pricing Schedule. Failure to do so may be cause for rejection of bids.

2. If a modification to a price is submitted which provides for a lump sum adjustment to the total price, the application of the lump sum adjustment to each item in the Pricing Schedule must be stated. If it is not stated, the bidder/offeror agrees that the lump sum adjustment shall be applied on a pro rata basis to every item in the Pricing Schedule.

3. The bidder/offeror shall distribute his indirect costs (overhead, profit, bond, etc.) over all the items in the Pricing Schedule. The Government will review all submitted Pricing Schedules for any unbalancing of the items. Any submitted Pricing Schedule determined to be unbalanced may be considered nonresponsive and cause the bidder to be ineligible for award.

4. The successful bidder/offeror grants the options listed in the Pricing Schedule to the Government. This option may be exercised any time up to 30 days after receipt of Notice to Proceed. Exercise of the option occurs upon mailing of written notice to the Contractor. Exercise will be made by the Contracting Officer. The price for exercise of the option includes all work and effort associated with the scope of that item. No additional time for contract completion will be allowed when an option is exercised. The given contract completion time was formulated to include time necessary to perform all option work.

5. EFARS 52.214-5000 ARITHMETIC DISCREPANCIES (MAR 1995)

(a) For the purpose of initial evaluation of bids/offers, the following will be utilized in resolving arithmetic discrepancies found on the face of the Pricing Schedule as submitted by bidders/offerors:

(1) Obviously misplaced decimal points will be corrected;

(2) Discrepancy between unit price and extended price, the unit price will govern;

(3) Apparent errors in extension of unit prices will be corrected;

(4) Apparent errors in addition of lump-sum and extended prices will be corrected.

(b) For the purpose of bid/offer evaluation, the Government will proceed on the assumption that the bidder/offeror intends the bid/offer to be evaluated on basis of the unit prices, the totals arrived at by resolution of arithmetic discrepancies as provided above and the bid/offer will be so reflected on the abstract of bids/offers.

(c) These correction procedures shall not be used to resolve any ambiguity concerning which bid/offer is low.

If the contractor or subcontractor does not already have sufficient resources demonstrated in the completed Preaward Survey, acceptable evidence of "the ability to obtain" the required, adequate resources (all of the resources discussed in subparagraphs a, e, and f above) normally consists of a commitment or explicit arrangement that will be in existence at the time of contract award to rent, purchase or otherwise acquire the needed facilities, equipment, other resources, or personnel.

52.0211-4805 AVAILABILITY OF CORPS OF ENGINEERS PUBLICATIONS DESCRIPTIONS (AUG 1998)

a. Corps of Engineers publications are available for inspection at the following location:

U.S. Army Corps of Engineers, Sacramento District
1325 J Street
Engineering Division, District Library, 8th Floor
Sacramento, CA 95814-2922
Telephone Number (916) 557-6657

b. Construction Criteria Base (CCB). The Construction Criteria Base (CCB) system available through the National Institute of Building Sciences includes copies of Corps of Engineers methods and specifications. Documents that are available from this or other such sources will no longer be available directly from the Corps and should be obtained from those sources. Information about the CCB and ordering instructions can be obtained from:

National Institute of Building Sciences
1090 Vermont Ave., NW, Suite 700
Washington, D.C. 20005
Phone: 202/289-7800 (ask for CCB Information)

c. The Corps of Engineers manual, EM 385-1-1, Safety and Health Requirements Manual, is available on the Internet at the following location: http://www.usace.army.mil/inet/usace-docs/eng-manuals/em385-1-1/.

52.0214-4503 EVALUATION FOR AWARD (JAN 1991)

The Government contemplates award of one contract to the responsive, responsible bidder who submits the low bid for the total of the following items in Pricing Schedule:

All line items listed in Pricing Schedule.
If Solicitation Pricing Schedule contains options.

(b) An organized site visit has been scheduled for--

JULY 09, 2002 at 10:00 A.M.

(c) Participants will meet at--

Fort Huachuca Resident Office (Bldg. 71922A) corner of Carter and Lebo at Fort Huachuca, Arizona

POC: Raymond L. Coker (520) 538-2145

52.252-1 SOLICITATION PROVISIONS INCORPORATED BY REFERENCE (FEB 1998)

This solicitation incorporates one or more solicitation provisions by reference, with the same force and effect as if they were given in full text. Upon request, the Contracting Officer will make their full text available. The offeror is cautioned that the listed provisions may include blocks that must be completed by the offeror and submitted with its quotation or offer. In lieu of submitting the full text of those provisions, the offeror may identify the provision by paragraph identifier and provide the appropriate information with its quotation or offer. Also, the full text of a solicitation provision may be accessed electronically at this/these address(es):

http://www.acqnet.gov/

52.252-3 ALTERATIONS IN SOLICITATION (APR 1984)

Portions of this solicitation are altered as follows:

None

52.252-5 AUTHORIZED DEVIATIONS IN PROVISIONS (APR 1984)

(a) The use in this solicitation of any Federal Acquisition Regulation (48 CFR Chapter 1) provision with an authorized deviation is indicated by the addition of"(DEVIATION)" after the date of the provision.

(b) The use in this solicitation of any Department of Defense FAR Supplement(48 CFR Chapter2) provision with an authorized deviation is indicated by the addition of "(DEVIATION)" after the name of the regulation.

52.217-5 EVALUATION OF OPTIONS (JUL 1990)

Except when it is determined in accordance with FAR 17.206(b) not to be in the Government's best interests, the Government will evaluate offers for award purposes by adding the total price for all options to the total price for the basic requirement. Evaluation of options will not obligate the Government to exercise the option(s).

(c) A corporate officer or a designee of the Contractor shall notify the Contracting Officer, in writing, before entering into a subcontract with a party that is debarred, suspended, or proposed for debarment (see FAR 9.404 for information on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs). The notice must include the following:

(1) The name of the subcontractor.

(2) The Contractor's knowledge of the reasons for the subcontractor being on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(3) The compelling reason(s) for doing business with the subcontractor notwithstanding its inclusion on the List of Parties Excluded from Federal Procurement and Nonprocurement Programs.

(4) The systems and procedures the Contractor has established to ensure that it is fully protecting the Government's interests when dealing with such subcontractor in view of the specific basis for the party's debarment, suspension, or proposed debarment.

52.211-10 COMMENCEMENT, PROSECUTION, AND COMPLETION OF WORK (APR 1984)

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 300 calendar days after notice to proceed. The time stated for completion shall include final cleanup of the premises.

52.211-12 LIQUIDATED DAMAGES--CONSTRUCTION (SEP 2000)

(a) If the Contractor fails to complete the work within the time specified in the contract, the Contractor shall pay liquidated damages to the Government in the amount of ***$1437.00 for each calendar day of delay until the work is completed or accepted***.

(b) If the Government terminates the Contractor's right to proceed, liquidated damages will continue to accrue until the work is completed. These liquidated damages are in addition to excess costs of repurchase under the Termination clause.

(3) General construction. The concern will perform at least 15 percent of the cost of the contract, not including the cost of materials, with its own employees.

(4) Construction by special trade contractors. The concern will perform at least 25 percent of the cost of the contract, not including the cost of materials, with its own employees.

~~52.219-16 LIQUIDATED DAMAGES-SUBCONTRACTING PLAN (JAN 1999)~~

~~(a) Failure to make a good faith effort to comply with the subcontracting plan, as used in this clause, means a willful or intentional failure to perform in accordance with the requirements of the subcontracting plan approved under the clause in this contract entitled "Small Business Subcontracting Plan," or willful or intentional action to frustrate the plan.~~

~~(b) Performance shall be measured by applying the percentage goals to the total actual subcontracting dollars or, if a commercial plan is involved, to the pro rata share of actual subcontracting dollars attributable to Government contracts covered by the commercial plan. If, at contract completion or, in the case of a commercial plan, at the close of the fiscal year for which the plan is applicable, the Contractor has failed to meet its subcontracting goals and the Contracting Officer decides in accordance with paragraph (c) of this clause that the Contractor failed to make a good faith effort to comply with its subcontracting plan, established in accordance with the clause in this contract entitled "Small Business Subcontracting Plan," the Contractor shall pay the Government liquidated damages in an amount stated. The amount of probable damages attributable to the Contractor's failure to comply shall be an amount equal to the actual dollar amount by which the Contractor failed to achieve each subcontract goal.~~

~~(c) Before the Contracting Officer makes a final decision that the Contractor has failed to make such good faith effort, the Contracting Officer shall give the Contractor written notice specifying the failure and permitting the Contractor to demonstrate what good faith efforts have been made and to discuss the matter. Failure to respond to the notice may be taken as an admission that no valid explanation exists. If, after consideration of all the pertinent data, the Contracting Officer finds that the Contractor failed to make a good faith effort to comply with the subcontracting plan, the Contracting Officer shall issue a final decision to that effect and require that the Contractor pay the Government liquidated damages as provided in paragraph (b) of this clause.~~

~~(d) With respect to commercial plans, the Contracting Officer who approved the plan will perform the functions of the Contracting Officer under this clause on behalf of all agencies with contracts covered by the commercial plan.~~

~~(e) The Contractor shall have the right of appeal, under the clause in this contract entitled Disputes, from any final decision of the Contracting Officer.~~

~~(f) Liquidated damages shall be in addition to any other remedies that the Government may have.~~

(2) The facility does not have 10 or more full-time employees as specified in section 313(b)(1)(A) of EPCRA, 42 U.S.C. 11023(b)(1)(A);

(3) The facility does not meet the reporting thresholds of toxic chemicals established under of EPCRA, 42 U.S.C. 11023(f) (including the alternate thresholds at 40 CFR 372.27, provided an appropriate certification form has been filed with EPA);

(4) The facility does not fall within Standard Industrial Classification Code (SIC) major groups 20 through 39 or their corresponding North American Industry Classification System (NAICS) sectors 31 through 33; or

(5) The facility is not located within any State of the United States, the District of Columbia, the Commonwealth of Puerto Rico, Guam, American Samoa, the United States Virgin Islands, the Northern Mariana Islands, or any other territory or possession over which the United States has jurisdiction.

(c) If the Contractor has certified to an exemption in accordance with one or more of the criteria in paragraph (b) of this clause, and after award of the contract circumstances change so that any of its owned or operated facilities used in the performance of this contract is no longer exempt--

(1) The Contractor shall notify the Contracting Officer; and

(2) The Contractor, as owner or operator of a facility used in the performance of this contract that is no longer exempt, shall (i) submit a Toxic Chemical Release Inventory Form (Form R) on or before July 1 for the prior calendar year during which the facility becomes eligible; and (ii) continue to file the annual Form R for the life of the contract for such facility.

(d) The Contracting Officer may terminate this contract or take other action as appropriate, if the Contractor fails to comply accurately and fully with the EPCRA and PPA toxic chemical release filing and reporting requirements.

(e) Except for acquisitions of commercial items, as defined in FAR Part 2, the Contractor shall--

(1) For competitive subcontracts expected to exceed $100,000 (including all options), include a solicitation provision substantially the same as the provision at FAR 52.223-13, Certification of Toxic Chemical Release Reporting; and

(2) Include in any resultant subcontract exceeding $100,000 (including all options), the substance of this clause, except this paragraph (e).

~~52.225-5 TRADE AGREEMENTS (FEB 2002)~~

~~(a) Definitions. As used in this clause.~~

~~Caribbean Basin country means any of the following countries: Antigua and Barbuda, Aruba, Bahamas, Barbados, Belize, British Virgin Islands, Costa Rica, Dominica, El Salvador, Grenada, Guatemala, Guyana, Haiti, Jamaica, Montserrat, Netherlands Antilles, Nicaragua, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Trinidad and Tobago.~~

~~Caribbean Basin country end product--~~

~~(1) Means an article that--~~

~~(i)(A) Is wholly the growth, product, or manufacture of a Caribbean Basin country; or~~

~~(B) In the case of an article that consists in whole or in part of materials from another country, has been substantially transformed in a Caribbean Basin country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed; and~~

~~(ii) Is not excluded from duty-free treatment for Caribbean countries under 19 U.S.C. 2703(b).~~

~~(A) For this reason, the following articles are not Caribbean Basin country end products:~~

~~(1) Tuna, prepared or preserved in any manner in airtight containers;~~

~~(2) Petroleum, or any product derived from petroleum;~~

~~(3) Watches and watch parts (including cases, bracelets, and straps) of whatever type including, but not limited to, mechanical, quartz digital, or quartz analog, if such watches or watch parts contain any material that is the product of any country to which the Harmonized Tariff Schedule of the United States (HTSUS) column 2 rates of duty apply (i.e., Afghanistan, Cuba, Laos, North Korea, and Vietnam); and~~

~~(4) Certain of the following: textiles and apparel articles; footwear, handbags, luggage, flat goods, work gloves, and leather wearing apparel; or handloomed, handmade, and folklore articles;~~

~~(B) Access to the HTSUS to determine duty free status of articles of these types is available at http://www.customs.ustreas.gov/impoexpo/impoexpo.htm. In particular, see the following:~~

~~(1) General Note 3(c), Products Eligible for Special Tariff treatment.~~

~~(2) General Note 17, Products of Countries Designated as Beneficiary Countries under the United States--Caribbean Basin Trade Partnership Act of 2000.~~

~~(3) Section XXII, Chapter 98, Subchapter II, Articles Exported and Returned, Advanced or Improved Abroad, U.S. Note 7(b).~~

~~(4) Section XXII, Chapter 98, Subchapter XX, Goods Eligible for Special Tariff Benefits under the United States--Caribbean Basin Trade Partnership Act; and~~

~~(2) Refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the acquisition, includes services (except transportation services) incidental to the article, provided that the value of those incidental services does not exceed that of the article itself.~~

~~Designated country means any of the following countries: Aruba, Austria, Bangladesh Belgium, Benin, Bhutan, Botswana, Burkina Faso, Burundi, Canada, Cape Verde, Central African Republic, Chad, Comoros, Denmark, Djibouti, Equatorial Guinea.~~

~~Finland, France, Gambia, Germany, Greece, Guinea, Guinea-Bissau, Haiti, Hong Kong, Ireland, Israel, Italy, Japan.~~

~~Kiribati, Korea, Republic of Lesotho, Liechtenstein, Luxembourg, Malawi, Maldives, Mali, Mozambique, Nepal, Netherlands, Niger, Norway, Portugal, Rwanda.~~

~~Sao Tome and Principe, Sierra Leone, Singapore, Somalia, Spain, Sweden, Switzerland, Tanzania U.R., Togo, Tuvalu, Uganda, United Kingdom, Vanuatu, Western Samoa, Yemen.~~

~~Designated country end product means an article that--~~

~~(1) Is wholly the growth, product, or manufacture of a designated country; or~~

~~(2) In the case of an article that consists in whole or in part of materials from another country, has been substantially transformed in a designated country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed. The term refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the end product includes services, (except transportation services) incidental to the article, provided that the value of those incidental services does not exceed that of the article itself.~~

~~End product means those articles, materials, and supplies to be acquired under the contract for public use.~~

~~North American Free Trade Agreement country means Canada or Mexico.~~

~~North American Free Trade Agreement country end product means an article that--~~

~~(1) Is wholly the growth, product, or manufacture of a North American Free Trade Agreement (NAFTA) country; or~~

~~(2) In the case of an article that consists in whole or in part of materials from another country, has been substantially transformed in a NAFTA country into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed. The term refers to a product offered for purchase under a supply contract, but for purposes of calculating the value of the end product includes services, (except transportation services) incidental to the article, provided that the value of those incidental services does not exceed that of the article itself.~~

~~United States means the 50 States and the District of Columbia, U.S. territories and possessions, Puerto Rico, the Northern Mariana Islands, and any other place subject to U.S. jurisdiction, but does not include leased bases.~~

~~U.S.-made end product means an article that is mined, produced, or manufactured in the United States or that is substantially transformed in the United States into a new and different article of commerce with a name, character, or use distinct from that of the article or articles from which it was transformed.,~~

~~(b) Implementation. This clause implements the Trade Agreements Act (19 U.S.C. 2501, et seq.) and the North American Free Trade Agreement Implementation Act of 1993, (NAFTA) (19 U.S.C. 3301 note), by restricting the acquisition of end products that are not U.S.-made, designated country, Caribbean Basin country, or NAFTA country end products.,~~

~~(c) Delivery of end products. The Contracting Officer has determined that the Trade Agreements Act and NAFTA apply to this acquisition. Unless otherwise specified, these trade agreements apply to all items in the Schedule. The Contractor shall deliver under this contract only U.S.-made, designated country, Caribbean Basin country, or NAFTA country end products except to the extent that, in its offer, it specified delivery of other end products in the provision entitled "Trade Agreements Certificate."~~

52.225-9 BUY AMERICAN ACT—CONSTRUCTION MATERIALS (MAY 2002)

(a) Definitions. As used in this clause--

Component means an article, material, or supply incorporated directly into a construction material.

Construction material means an article, material, or supply brought to the construction site by the Contractor or a subcontractor for incorporation into the building or work. The term also includes an item brought to the site preassembled from articles, materials, or supplies. However, emergency life safety systems, such as emergency lighting, fire alarm, and audio evacuation systems, that are discrete systems incorporated into a public building or work and that are produced as complete systems, are evaluated as a single and distinct construction material regardless of when or how the individual parts or components of those systems are delivered to the construction site. Materials purchased directly by the Government are supplies, not construction material.

Cost of components means--

(1) For components purchased by the Contractor, the acquisition cost, including transportation costs to the place of incorporation into the end product (whether or not such costs are paid to a domestic firm), and any applicable duty (whether or not a duty-free entry certificate is issued); or

(2) For components manufactured by the Contractor, all costs associated with the manufacture of the component, including transportation costs as described in paragraph (1) of this definition, plus allocable overhead costs, but excluding profit. Cost of components does not include any costs associated with the
manufacture of the end product.

Foreign construction material.... .....
....
Domestic construction material... .....
....

Include all delivery costs to the construction site and any applicable duty (whether or not a duty-free entry
certificate is issued).
List name, address, telephone number, and contact for suppliers surveyed.
Attach copy of response; if oral,
attach summary.
Include other applicable supporting information.

52.225-13 RESTRICTIONS ON CERTAIN FOREIGN PURCHASES (JUL 2000)

(a) The Contractor shall not acquire, for use in the performance of this contract, any supplies or services originating from sources within, or that were located in or transported from or through, countries whose products are banned from importation into the United States under regulations of the Office of Foreign Assets Control, Department of the Treasury. Those countries are Cuba, Iran, Iraq, Libya, North Korea, Sudan, the territory of Afghanistan controlled by the Taliban, and Serbia (excluding the territory of Kosovo).

(b) The Contractor shall not acquire for use in the performance of this contract any supplies or services from entities controlled by the government of Iraq.

(c) The Contractor shall insert this clause, including this paragraph (c), in all subcontracts.

~~52.226-1 UTILIZATION OF INDIAN ORGANIZATIONS AND INDIAN-OWNED ECONOMIC ENTERPRISES (JUN 2000)~~

~~(a) Definitions. As used in this clause:~~

~~"Indian" means any person who is a member of any Indian tribe, band, group, pueblo or community that is recognized by the Federal Government as eligible for services from the Bureau of Indian Affairs (BIA) in accordance with 25 U.S.C. 1452(c) and any ``Native'' as defined in the Alaska Native Claims Settlement Act (43 U.S.C. 1601).~~

~~"Indian organization" means the governing body of any Indian tribe or entity established or recognized by the governing body of an Indian tribe for the purposes of 25 U.S.C., chapter 17.~~

~~"Indian-owned economic enterprise" means any Indian-owned (as determined by the Secretary of the Interior) commercial, industrial, or business activity established or organized for the purpose of profit, provided that Indian ownership constitutea not less than 51 percent of the enterprise.~~

~~"Indian tribe" means any Indian tribe, band, group, pueblo or community, including native villages and native groups (including corporations organized~~

~~by Kenai, Juneau, Sitka, and Kodiak) as defined in the Alaska Native Claims Settlement Act, that is recognized by the Federal Government as eligible for services from BIA in accordance with 25 U.S.C. 1542(c).~~

~~"Interested party" means a prime contractor or an actual or prospective offeror whose direct economic interest would be affected by the award of a subcontract or by the failure to award a subcontract.~~

~~(b) The Contractor shall use its best efforts to give Indian organizations and Indian-owned economic enterprises (25 U.S.C. 1544) the maximum practicable opportunity to participate in the subcontracts it awards to the fullest extent consistent with efficient performance of its contract.~~

~~(1) The Contracting Officer and the Contractor, acting in good faith, may rely on the representation of an Indian organization or Indian-owned economic enterprise as to its eligibility, unless an interested party challenges its status or the Contracting Officer has independent reason to question that status. In the event of a challenge to the representation of a subcontractor, the Contracting Officer will refer the matter to the U.S. Department of the Interior, Bureau of Indian Affairs (BIA), Attn: Chief, Division of Contracting and Grants Administration, 1849 C Street, NW., MS 2626-MIB, Washington, DC 20240-4000.~~

~~The BIA will determine the eligibility and notify the Contracting Officer. No incentive payment will be made within 50 working days of subcontract award or while a challenge is pending. If a subcontractor is determined to be an ineligible participant, no incentive payment will be made under the Indian Incentive Program.~~

~~(2) The Contractor may request an adjustment under the Indian Incentive Program to the following:~~

~~(i) The estimated cost of a cost-type contract.~~

~~(ii) The target cost of a cost-plus-incentive-fee prime contract.~~

~~(iii) The target cost and ceiling price of a fixed-price incentive prime contract.~~

~~(iv) The price of a firm-fixed-price prime contract.~~

~~(3) The amount of the adjustment to the prime contract is 5 percent of the estimated cost, target cost, or firm-fixed-price included in the subcontract initially awarded to the Indian organization or Indian-owned economic enterprise.~~

~~(4) The Contractor has the burden of proving the amount claimed and must assert its request for an adjustment prior to completion of contract performance.~~

~~(c) The Contracting Officer, subject to the terms and conditions of the contract and the availability of funds, will authorize an incentive payment of 5 percent of the amount paid to the subcontractor. The Contracting Officer will seek funding in accordance with agency procedures.~~

52.232-17 INTEREST (JUNE 1996)

(a) Except as otherwise provided in this contract under a Price Reduction for Defective Cost or Pricing Data clause or a Cost Accounting Standards clause, all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code (26 U.S.C. 1481)) shall bear simple interest from the date due until paid unless paid within 30 days of becoming due. The interest rate shall be the interest rate established by the Secretary of the Treasury as provided in Section 12 of the Contract Disputes Act of 1978 (Public Law 95-563), which is applicable to the period in which the amount becomes due, as provided in paragraph (b) of this clause, and then at the rate applicable for each six-month period as fixed by the Secretary until the amount is paid. reproduce, prepare derivative works, distribute copies to the public, and (b) Amounts shall be due at the earliest of the following dates:

(1) The date fixed under this contract.

(2) The date of the first written demand for payment consistent with this contract, including any demand resulting from a default termination.

(3) The date the Government transmits to the Contractor a proposed supplemental agreement to confirm completed negotiations establishing the amount of debt.

(4) If this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or a negotiated pricing agreement not confirmed by contract modification.

(c) The interest charge made under this clause may be reduced under the procedures prescribed in 32.614-2 of the Federal Acquisition Regulation in effect on the date of this contract.

~~52.232-33 PAYMENT BY ELECTRONIC FUNDS TRANSFER-CENTRAL CONTRACTOR REGISTRATION (MAY 1999)~~

~~(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT), except as provided in paragraph (a)(2) of this clause. As used in this clause, the term "EFT" refers to the funds transfer and may also include the payment information transfer.~~

~~(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--~~

~~(i) Accept payment by check or some other mutually agreeable method of payment; or~~

~~(ii) Request the Government to extend the payment due date until such time as the Government can make payment by EFT (but see paragraph (d) of this clause).~~

~~(b) Contractor's EFT information. The Government shall make payment to the Contractor using the EFT information contained in the Central Contractor Registration (CCR) database. In the event that the EFT information changes, the Contractor shall be responsible for providing the updated information to the CCR database.~~

~~(c) Mechanisms for EFT payment. The Government may make payment by EFT through either the Automated Clearing House (ACH) network, subject to the rules of the National Automated Clearing House Association, or the Fedwire Transfer System. The rules governing Federal payments through the ACH are contained in 31 CFR part 210.~~

~~(d) Suspension of payment. If the Contractor's EFT information in the CCR database is incorrect, then the Government need not make payment to the Contractor under this contract until correct EFT information is entered into the CCR database; and any invoice or contract financing request shall be deemed not to be a proper invoice for the purpose of prompt payment under this contract. The prompt payment terms of the contract regarding notice of an improper invoice and delays in accrual of interest penalties apply.~~

~~(e) Contractor EFT arrangements. If the Contractor has identified multiple payment receiving points (i.e., more than one remittance address and/or EFT information set) in the CCR database, and the Contractor has not notified the Government of the payment receiving point applicable to this contract, the Government shall make payment to the first payment receiving point (EFT information set or remittance address as applicable) listed in the CCR database.~~

~~(f) Liability for uncompleted or erroneous transfers. (1) If an uncompleted or erroneous transfer occurs because the Government used the Contractor's EFT information incorrectly, the Government remains responsible for --~~

~~(i) Making a correct payment;~~

~~(ii) Paying any prompt payment penalty due; and~~

~~(iii) Recovering any erroneously directed funds.~~

~~(2) If an uncompleted or erroneous transfer occurs because the Contractor's EFT information was incorrect, or was revised within 30 days of Government release of the EFT payment transaction instruction to the Federal Reserve System, and --~~

~~(i) If the funds are no longer under the control of the payment office, the Government is deemed to have made payment and the Contractor is responsible for recovery of any erroneously directed funds; or~~

~~(ii) If the funds remain under the control of the payment office, the Government shall not make payment, and the provisions of paragraph (d) of this clause shall apply.~~

~~(g) EFT and prompt payment. A payment shall be deemed to have been made in a timely manner in accordance with the prompt payment terms of this contract if, in the EFT payment transaction instruction released to the Federal Reserve System, the date specified for settlement of the payment is on or~~

~~before the prompt payment due date, provided the specified payment date is a valid date under the rules of the Federal Reserve System.~~

~~(h) EFT and assignment of claims. If the Contractor assigns the proceeds of this contract as provided for in the assignment of claims terms of this contract, the Contractor shall require as a condition of any such assignment, that the assignee shall register in the CCR database and shall be paid by EFT in accordance with the terms of this clause. In all respects, the requirements of this clause shall apply to the assignee as if it were the Contractor. EFT information that shows the ultimate recipient of the transfer to be other than the Contractor, in the absence of a proper assignment of claims acceptable to the Government, is incorrect EFT information within the meaning of paragraph (d) of this clause.~~

~~(i) Liability for change of EFT information by financial agent. The Government is not liable for errors resulting from changes to EFT information made by the Contractor's financial agent.~~

~~(j) Payment information. The payment or disbursing office shall forward to the Contractor available payment information that is suitable for transmission as of the date of release of the EFT instruction to the Federal Reserve System. The Government may request the Contractor to designate a desired format and method(s) for delivery of payment information from a list of formats and methods the payment office is capable of executing. However, the Government does not guarantee that any particular format or method of delivery is available at any particular payment office and retains the latitude to use the format and delivery method most convenient to the Government. If the Government makes payment by check in accordance with paragraph (a) of this clause, the Government shall mail the payment information to the remittance address contained in the CCR database.~~

52.232-34 PAYMENT BY ELECTRONIC FUNDS TRANSFER—OTHER THAN CENTRAL CONTRACTOR REGISTRATION (MAY 1999)

(a) Method of payment. (1) All payments by the Government under this contract shall be made by electronic funds transfer (EFT) except as provided in paragraph (a)(2) of this clause. As used in this clause, the term “EFT” refers to the funds transfer and may also include the payment information transfer.

(2) In the event the Government is unable to release one or more payments by EFT, the Contractor agrees to either--

(i) Accept payment by check or some other mutually agreeable method of payment; or

(ii) Request the Government to extend payment due dates until such time as the Government makes payment by EFT (but see paragraph (d) of this clause).

(b) Mandatory submission of Contractor's EFT information. (1) The Contractor is required to provide the Government with the information required to make payment by EFT (see paragraph (j) of this clause). The Contractor shall provide this information directly to the office designated in this contract to receive that information (hereafter: “designated office”') by no later than 15 days prior to submission of the first request for payment If not

Contracting Officer shall notify the Contractor orally, with written confirmation, and request immediate initiation of corrective action. This notice, when delivered to the Contractor or the Contractor's representative at the work site, shall be deemed sufficient notice of the noncompliance and that corrective action is required. After receiving the notice, the Contractor shall immediately take corrective action. If the Contractor fails or refuses to promptly take corrective action, the Contracting Officer may issue an order stopping all or part of the work until satisfactory corrective action has been taken. The Contractor shall not be entitled to any equitable adjustment of the contract price or extension of the performance schedule on any stop work order issued under this clause.

(e) The Contractor shall insert this clause, including this paragraph (e), with appropriate changes in the designation of the parties, in subcontracts.

(f) Before commencing the work, the Contractor shall-

(1) Submit a written proposed plan for implementing this clause. The plan shall include an analysis of the significant hazards to life, limb, and property inherent in contract work performance and a plan for controlling these hazards; and

(2) Meet with representatives of the Contracting Officer to discuss and develop a mutual understanding relative to administration of the overall safety program.

~~52.236-14 AVAILABILITY AND USE OF UTILITY SERVICES (APR 1984)~~

~~(a) The Government shall make all reasonably required amounts of utilities available to the Contractor from existing outlets and supplies, as specified in the contract. Unless otherwise provided in the contract, the amount of each utility service consumed shall be charged to or paid for by the Contractor at prevailing rates charged to the Government or, where the utility is produced by the Government, at reasonable rates determined by the Contracting Officer. The Contractor shall carefully conserve any utilities furnished without charge.~~

~~(b) The Contractor, at its expense and in a workmanlike manner satisfactory to the Contracting Officer, shall install and maintain all necessary temporary connections and distribution lines, and all meters required to measure the amount of each utility used for the purpose of determining charges. Before final acceptance of the work by the Government, the Contractor shall remove all the temporary connections, distribution lines, meters, and associated paraphernalia.~~

52.236-15 SCHEDULES FOR CONSTRUCTION CONTRACTS (APR 1984)

(a) The Contractor shall, within five days after the work commences on the contract or another period of time determined by the Contracting Officer, prepare and submit to the Contracting Officer for approval three copies of a practicable schedule showing the order in which the Contractor proposes to perform the work, and the dates on which the Contractor contemplates starting and completing the several salient features of the work (including acquiring materials, plant, and equipment). The schedule shall be in the form of a

(2) If this contract is not a construction contract, in all subcontracts under this contract that are for--

(i) Noncommercial items; or

(ii) Commercial items that--

(A) The Contractor is reselling or distributing to the Government without adding value (generally, the Contractor does not add value to items that it subcontracts for f.o.b. destination shipment);

(B) Are shipped in direct support of U.S. military contingency operations, exercises, or forces deployed in humanitarian or peacekeeping operations; or

(C) Are commissary or exchange cargoes transported outside of the Defense Transportation System in accordance with 10 U.S.C. 2643.

52.227-2 NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (AUG 1996)

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any claim or suit against the Government on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed under this contract, the Contractor shall furnish to the Government, when requested by the Contracting Officer, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except where the Contractor has agreed to indemnify the Government.

(c) ***The Contractor agrees to include, and require inclusion of, this clause in all subcontracts at any tier for supplies or services (including construction and architect-engineer subcontracts and those for material, supplies, models, samples, or design or testing services) expected to exceed the simplified acquisition threshold at (FAR) 2.101.to exceed the dollar amount set forth in 13.000 of the Federal Acquisition Regulation (FAR).***

52.232-23 ASSIGNMENT OF CLAIMS (JAN 1986)

(a) The Contractor, under the Assignment of Claims Act, as amended, 31 U.S.C. 3727, 41 U.S.C. 15 (hereafter referred to as "the Act"), may assign its rights to be paid amounts due or to become due as a result of the performance of this contract to a bank, trust company, or other financing institution, including any Federal lending agency. The assignee under such an assignment may thereafter further assign or reassign its right under the original assignment to any type of financing institution described in the preceding sentence.

(b) Any assignment or reassignment authorized under the Act and this clause shall cover all unpaid amounts payable under this contract, and shall not be made to more than one party, except that an assignment or reassignment may be made to one party as agent or trustee for two or more parties participating in the financing of this contract.

(c) The Contractor shall not furnish or disclose to any assignee under this contract any classified document (including this contract) or information related to work under this contract until the Contracting Officer authorizes such action in writing.

52.232-27 PROMPT PAYMENT FOR CONSTRUCTION CONTRACTS (FEB 2002)

Notwithstanding any other payment terms in this contract, the Government will make invoice payments under the terms and conditions specified in this clause. The Government considers payment as being made on the day a check is dated or the date of an electronic funds transfer. Definitions of pertinent terms are set forth in sections 2.101, 32.001, and 32.902 of the Federal Acquisition Regulation. All days referred to in this clause are calendar days, unless otherwise specified. (However, see paragraph (a)(3) concerning payments due on Saturdays, Sundays, and legal holidays.)

(a) Invoice payments--(1) Types of invoice payments. For purposes of this clause, there are several types of invoice payments that may occur under this contract, as follows:

(i) Progress payments, if provided for elsewhere in this contract, based on Contracting Officer approval of the estimated amount and value of work or services performed, including payments for reaching milestones in any project.

(A) The due date for making such payments is 14 days after the designated billing office receives a proper payment request. If the designated billing office fails to annotate the payment request with the actual date of receipt at the time of receipt, the payment due date is the 14th day after the date of the Contractor's payment request, provided the designated billing office receives a proper payment request and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(B) The due date for payment of any amounts retained by the Contracting Officer in accordance with the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts, is as specified in the contract or, if not specified, 30 days after approval by the Contracting Officer for release to the Contractor.

(ii) Final payments based on completion and acceptance of all work and presentation of release of all claims against the Government arising by virtue of the contract, and payments for partial deliveries that have been accepted by the Government (e.g., each separate building, public work, or other division of the contract for which the price is stated separately in the contract).

(A) The due date for making such payments is the later of the following two events:

(1) The 30th day after the designated billing office receives a proper invoice from the Contractor.

(2) The 30th day after Government acceptance of the work or services completed by the Contractor. For a final invoice when the payment amount is subject to contract settlement actions (e.g., release of claims), acceptance is deemed to occur on the effective date of the contract settlement.

(B) If the designated billing office fails to annotate the invoice with the date of actual receipt at the time of receipt, the invoice payment due date is the 30th day after the date of the Contractor's invoice, provided the designated billing office receives a proper invoice and there is no disagreement over quantity, quality, or Contractor compliance with contract requirements.

(2) Contractor's invoice. The Contractor shall prepare and submit invoices to the designated billing office specified in the contract. A proper invoice must include the items listed in paragraphs (a)(2)(i) through (a)(2)(xi) of this clause. If the invoice does not comply with these requirements, the designated billing office must return it within 7 days after receipt, with the reasons why it is not a proper invoice. When computing any interest penalty owed the Contractor, the Government will take into account if the Government notifies the Contractor of an improper invoice in an untimely manner.

(i) Name and address of the Contractor.

(ii) Invoice date and invoice number. (The Contractor should date invoices as close as possible to the date of mailing or transmission.)

(iii) Contract number or other authorization for work or services performed (including order number and contract line item number).

(iv) Description of work or services performed.

(v) Delivery and payment terms (e.g., discount for prompt payment terms).

(vi) Name and address of Contractor official to whom payment is to be sent (must be the same as that in the contract or in a proper notice of assignment).

(vii) Name (where practicable), title, phone number, and mailing address of person to notify in the event of a defective invoice.

(viii) For payments described in paragraph (a)(1)(i) of this clause, substantiation of the amounts requested and certification in accordance with the requirements of the clause at 52.232-5, Payments Under Fixed-Price Construction Contracts.

(ix) Taxpayer Identification Number (TIN). The Contractor shall include its TIN on the invoice only if required elsewhere in this contract.

(x) Electronic funds transfer (EFT) banking information.

(A) The Contractor shall include EFT banking information on the invoice only if required elsewhere in this contract.

(B) If EFT banking information is not required to be on the invoice, in order for the invoice to be a proper invoice, the Contractor shall have submitted correct EFT banking information in accordance with the applicable solicitation provision (e.g., 52.232-38, Submission of Electronic Funds Transfer Information with Offer), contract clause (e.g., 52.232-33, Payment by Electronic Funds Transfer--Central Contractor Registration, or 52.232-34, Payment by Electronic Funds Transfer--Other Than Central Contractor Registration), or applicable agency procedures.

(C) EFT banking information is not required if the Government waived the requirement to pay by EFT.

(xi) Any other information or documentation required by the contract.

(3) Interest penalty. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if payment is not made by the due date and the conditions listed in paragraphs (a)(3)(i) through (a)(3)(iii) of this clause are met, if applicable. However, when the due date falls on a Saturday, Sunday, or legal holiday, the designated payment office may make payment on the following working day without incurring a late payment interest penalty.

(i) The designated billing office received a proper invoice.

(ii) The Government processed a receiving report or other Government documentation authorizing payment and there was no disagreement over quantity, quality, Contractor compliance with any contract term or condition, or requested progress payment amount.

(iii) In the case of a final invoice for any balance of funds due the Contractor for work or services performed, the amount was not subject to further contract settlement actions between the Government and the Contractor.

(4) Computing penalty amount. The Government will compute the interest penalty in accordance with the Office of Management and Budget prompt payment regulations at 5 CFR part 1315.

(i) For the sole purpose of computing an interest penalty that might be due the Contractor for payments described in paragraph (a)(1)(ii) of this clause, Government acceptance or approval is deemed to occur constructively on the 7th day after the Contractor has completed the work or services in accordance with the terms and conditions of the contract. If actual acceptance or approval occurs within the constructive acceptance or approval period, the Government will base the determination of an interest penalty on the actual date of acceptance or approval. Constructive acceptance or constructive approval requirements do not apply if there is a disagreement over quantity, quality, or Contractor compliance with a contract provision. These requirements also do not compel Government officials to accept work or services, approve Contractor estimates, perform contract administration functions, or make payment prior to fulfilling their responsibilities.

(ii) The prompt payment regulations at 5 CFR 1315.10(c) do not require the Government to pay interest penalties if payment delays are due to disagreement between the Government and the Contractor over the payment amount or other issues involving contract compliance, or on amounts temporarily withheld or retained in accordance with the terms of the contract. The Government and the Contractor shall resolve claims involving disputes, and any interest that may be payable in accordance with the clause at FAR 52.233-1, Disputes.

(5) Discounts for prompt payment. The designated payment office will pay an interest penalty automatically, without request from the Contractor, if the Government takes a discount for prompt payment improperly. The Government will calculate the interest penalty in accordance with the prompt payment regulations at 5 CFR part 1315.

(6) Additional interest penalty. (i) The designated payment office will pay a penalty amount, calculated in accordance with the prompt payment regulations at 5 CFR part 1315 in addition to the interest penalty amount only if--

(A) The Government owes an interest penalty of $1 or more;

(B) The designated payment office does not pay the interest penalty within 10 days after the date the invoice amount is paid; and

(C) The Contractor makes a written demand to the designated payment office for additional penalty payment, in accordance with paragraph (a)(6)(ii) of this clause, postmarked not later than 40 days after the date the invoice amount is paid.

(ii)(A) The Contractor shall support written demands for additional penalty payments with the following data. The Government will not request any additional data. The Contractor shall--

(1) Specifically assert that late payment interest is due under a specific invoice, and request payment of all overdue late payment interest penalty and such additional penalty as may be required;

(2) Attach a copy of the invoice on which the unpaid late payment interest was due; and

(3) State that payment of the principal has been received, including the date of receipt.

(B) If there is no postmark or the postmark is illegible--

(1) The designated payment office that receives the demand will annotate it with the date of receipt provided the demand is received on or before the 40th day after payment was made; or

(2) If the designated payment office fails to make the required annotation, the Government will determine the demand's validity based on the date the Contractor has placed on the demand, provided such date is no later than the 40th day after payment was made.

(b) Contract financing payments. If this contract provides for contract financing, the Government will make contract financing payments in accordance with the applicable contract financing clause.

(c) Subcontract clause requirements. The Contractor shall include in each subcontract for property or services (including a material supplier) for the purpose of performing this contract the following:

(1) Prompt payment for subcontractors. A payment clause that obligates the Contractor to pay the subcontractor for satisfactory performance under its subcontract not later than 7 days from receipt of payment out of such amounts as are paid to the Contractor under this contract.

(2) Interest for subcontractors. An interest penalty clause that obligates the Contractor to pay to the subcontractor an interest penalty for each payment not made in accordance with the payment clause--

(i) For the period beginning on the day after the required payment date and ending on the date on which payment of the amount due is made; and

(ii) Computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contract Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(3) Subcontractor clause flowdown. A clause requiring each subcontractor to use:

(i) Include a payment clause and an interest penalty clause conforming to the standards set forth in paragraphs (c)(1) and (c)(2) of this clause in each of its subcontracts; and

(ii) Require each of its subcontractors to include such clauses in their subcontracts with each lower-tier subcontractor or supplier.

(d) Subcontract clause interpretation. The clauses required by paragraph (c) of this clause shall not be construed to impair the right of the Contractor or a subcontractor at any tier to negotiate, and to include in their subcontract, provisions that--

(1) Retainage permitted. Permit the Contractor or a subcontractor to retain (without cause) a specified percentage of each progress payment otherwise due to a subcontractor for satisfactory performance under the subcontract without incurring any obligation to pay a late payment interest penalty, in accordance with terms and conditions agreed to by the parties to the subcontract, giving such recognition as the parties deem appropriate to the ability of a subcontractor to furnish a performance bond and a payment bond;

(2) Withholding permitted. Permit the Contractor or subcontractor to make a determination that part or all of the subcontractor's request for payment may be withheld in accordance with the subcontract agreement; and

(3) Withholding requirements. Permit such withholding without incurring any obligation to pay a late payment penalty if--

(i) A notice conforming to the standards of paragraph (g) of this clause previously has been furnished to the subcontractor; and

(ii) The Contractor furnishes to the Contracting Officer a copy of any notice issued by a Contractor pursuant to paragraph (d)(3)(i) of this clause.

(e) Subcontractor withholding procedures. If a Contractor, after making a request for payment to the Government but before making a payment to a subcontractor for the subcontractor's performance covered by the payment request, discovers that all or a portion of the payment otherwise due such subcontractor is subject to withholding from the subcontractor in accordance with the subcontract agreement, then the Contractor shall--

(1) Subcontractor notice. Furnish to the subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon ascertaining the cause giving rise to a withholding, but prior to the due date for subcontractor payment;

(2) Contracting Officer notice. Furnish to the Contracting Officer, as soon as practicable, a copy of the notice furnished to the subcontractor pursuant to paragraph (e)(1) of this clause;

(3) Subcontractor progress payment reduction. Reduce the subcontractor's progress payment by an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (e)(1) of this clause;

(4) Subsequent subcontractor payment. Pay the subcontractor as soon as practicable after the correction of the identified subcontract performance deficiency, and--

(i) Make such payment within--

(A) Seven days after correction of the identified subcontract performance deficiency (unless the funds therefor must be recovered from the Government because of a reduction under paragraph (e)(5)(i)) of this clause; or

(B) Seven days after the Contractor recovers such funds from the Government; or

(ii) Incur an obligation to pay a late payment interest penalty computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts Disputes Act of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty;

(5) Notice to Contracting Officer. Notify the Contracting Officer upon--

(i) Reduction of the amount of any subsequent certified application for payment; or

(ii) Payment to the subcontractor of any withheld amounts of a progress payment, specifying--

(A) The amounts withheld under paragraph (e)(1) of this clause; and

(B) The dates that such withholding began and ended; and

(6) Interest to Government. Be obligated to pay to the Government an amount equal to interest on the withheld payments (computed in the manner provided in 31 U.S.C. 3903(c)(1)), from the 8th day after receipt of the withheld amounts from the Government until--

(i) The day the identified subcontractor performance deficiency is corrected; or

(ii) The date that any subsequent payment is reduced under paragraph (e)(5)(i) of this clause.

(f) Third-party deficiency reports--(1) Withholding from subcontractor. If a Contractor, after making payment to a first-tier subcontractor, receives from a supplier or subcontractor of the first-tier subcontractor (hereafter referred to as a "second-tier subcontractor") a written notice in accordance with section 2 of the Act of August 24, 1935 (40 U.S.C. 270b, Miller Act), asserting a deficiency in such first-tier subcontractor's performance under the contract for which the Contractor may be ultimately liable, and the Contractor determines that all or a portion of future payments otherwise due such first-tier subcontractor is subject to withholding in accordance with the subcontract agreement, the Contractor may, without incurring an obligation to pay an interest penalty under paragraph (e)(6) of this clause--

(i) Furnish to the first-tier subcontractor a notice conforming to the standards of paragraph (g) of this clause as soon as practicable upon making such determination; and

(ii) Withhold from the first-tier subcontractor's next available progress payment or payments an amount not to exceed the amount specified in the notice of withholding furnished under paragraph (f)(1)(i) of this clause.

(2) Subsequent payment or interest charge. As soon as practicable, but not later than 7 days after receipt of satisfactory written notification that the identified subcontract performance deficiency has been corrected, the Contractor shall--

(i) Pay the amount withheld under paragraph (f)(1)(ii) of this clause to such first-tier subcontractor; or

(ii) Incur an obligation to pay a late payment interest penalty to such first-tier subcontractor computed at the rate of interest established by the Secretary of the Treasury, and published in the Federal Register, for interest payments under section 12 of the Contracts DisputesAct of 1978 (41 U.S.C. 611) in effect at the time the Contractor accrues the obligation to pay an interest penalty.

(g) Written notice of subcontractor withholding. The Contractor shall issue a written notice of any withholding to a subcontractor (with a copy furnished to the Contracting Officer), specifying--

(1) The amount to be withheld;

(2) The specific causes for the withholding under the terms of the subcontract; and

(3) The remedial actions to be taken by the subcontractor in order to receive payment of the amounts withheld.

(h) Subcontractor payment entitlement. The Contractor may not request payment from the Government of any amount withheld or retained in accordance with paragraph (d) of this clause until such time as the Contractor has determined and certified to the Contracting Officer that the subcontractor is entitled to the payment of such amount.

(i) Prime-subcontractor disputes. A dispute between the Contractor and subcontractor relating to the amount or entitlement of a subcontractor to a payment or a late payment interest penalty under a clause included in the subcontract pursuant to paragraph (c) of this clause does not constitute a dispute to which the Government is a party. The Government may not be interpleaded in any judicial or administrative proceeding involving such a dispute.

(j) Preservation of prime-subcontractor rights. Except as provided in paragraph (i) of this clause, this clause shall not limit or impair any contractual, administrative, or judicial remedies otherwise available to the Contractor or a subcontractor in the event of a dispute involving late payment or nonpayment by the Contractor or deficient subcontract performance or nonperformance by a subcontractor.

(k) Non-recourse for prime contractor interest penalty. The Contractor's obligation to pay an interest penalty to a subcontractor pursuant to the clauses included in a subcontract under paragraph (c) of this clause shall not be construed to be an obligation of the Government for such interest penalty. A cost-reimbursement claim may not include any amount for reimbursement of such interest penalty.

(l) Overpayments. If the Contractor becomes aware of a duplicate payment or that the Government has otherwise overpaid on an invoice payment, the Contractor shall immediately notify the Contracting Officer and request instructions for disposition of the overpayment.

52.0236-4801 SALVAGE AND SCRAP GOVERNMENT PROPERTY (OCT 1993)

(a) "Government property" means all property owned by or leased to the Government or acquired by the Government under the terms of the contract. It includes both Government-furnished property and contractor-acquired property.

(b) "Salvage" means Government property in possession of a contractor, including subcontractors, that, because of its worn, damaged, deteriorated, or incomplete condition or specialized nature, has no reasonable prospect of sale or use as serviceable property without major repairs, but has some value in excess of its scrap value.

(c) "Scrap" means Government personal property that has no value except for its basic material content.

(d) In accordance with FAR 45.505-8 the Contractor shall maintain records of all scrap and salvage generated from this contract. The Contractor's records shall contain the following information:

(1) Contract Number

(2) Description of salvageable items or classification (material content) of scrap

(3) Quantity on hand

(e) The Contractor shall provide final accounting and disposition recommendations of all Government property not consumed in performing this contract or delivered to the Government including salvage and scrap. The Government will review the Contractor's records and shall cause correction if the Government disagrees with the classification of items as salvage or scrap. The Contractor shall dispose of the items as directed by the Contracting Officer. Items designated as scrap (agreed to by the Contracting Officer) shall be retained by the Contractor; its disposition shall be the responsibility of the Contractor. See Specification Section 01505, paragraph entitled "Scrap Material". Items designated as salvageable items (agreed to by the Contracting Officer) shall be turned over to the Government.

52.0236-4901 PARTNERING (MAR 1992)

The Government intends to encourage the foundation of a cohesive partnership with the Contractor and its subcontractors. This partnership will be structured to draw on the strengths of each organization to identify and achieve reciprocal goals. The objectives are effective and efficient contract performance and intended to achieve completion within budget, on schedule, and in accordance with plans and specifications. This partnership would be bilateral in makeup, and participation will be totally voluntary. Any costs associated with effectuating this partnership will be agreed to by both parties and will be shared equally with no change in contract price. To implement this partnership initiative it is anticipated that within 60 days of Notice to Proceed the Contractor's on-site project manager and the Government's Resident Engineer would attend a one or two-day partnership development seminar/team building workshop together with the Contractor's key on-site staff and key Government personnel. Follow-up workshops of 1 or 2 days duration would be held periodically throughout the duration of the contract as agreed to by the Contractor and the Government.

52.236-4001 AS-BUILT DRAWINGS (PROGRESS PAYMENT) (OCT 1998)

One-half of one percent of construction award money shall be withheld until the final as-built drawings and CADD files are accepted by the Government.

INDEX ATTACHMENTS

1. SUBMISSION OF EFT INFORMATION TO THE PAYMENT OFFICE

The Payment Office for this contract will be the USACE Finance Center (UFC) in Millington, Tennessee. Payments under this contract will be made by Electronic Funds Transfer (EFT).

The Direct Deposit Authorization Form (UFC-DISB-4) necessary for the UFC to make an Electronic Funds Transfer to your account and instructions for completing this form are attached. In accordance with FAR 52.232-34, Payment by Electronic Funds Transfer - Other than Central Contractor Registration (see Section 00700), this form must be completed by the successful contractor and forwarded to the Payment Office at the following address: USACE Finance Center, ATTN: CEFC-AD (Attn: Lee Autry), 5720 Integrity Drive, Millington, TN 38054-5005. This form is available at the following website: www.fc.usace.army.mil. If you download this form, please be sure to add the Installation EROC code of AL1" for Los Angeles District.

Further information regarding Electronic Funds Transfer is available at the following website: www.fms.treas.gov/eft/208agency.html.

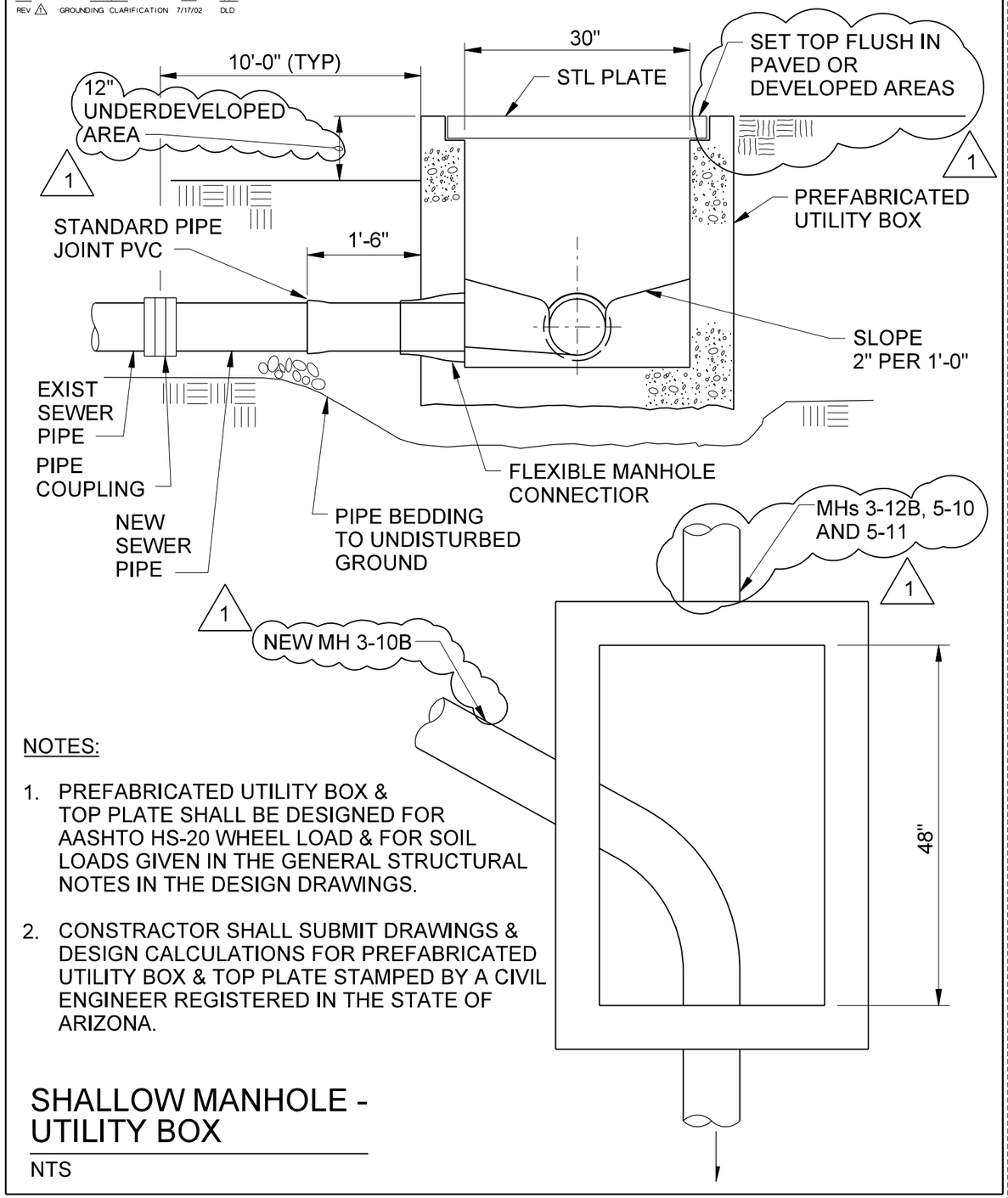
2. PREAWARD SURVEY - SEE SECTION 00100, 52.0209-4501. THE PREAWARD SURVEY IS ATTACHED FOR INFORMATION PURPOSES ONLY; IT WILL BE REQUIRED ONLY FROM THE LOW BIDDER AFTER BID OPENING IF THE LOW BIDDER HAS NOT HAD A CONTRACT WITH THE SACRAMENTO DISTRICT, CORPS OF ENGINEERS, IN THE LAST TWELVE-MONTH PERIOD. IT IS NOT REQUIRED AS PART OF THE BID PACKAGE.

3. MISCELLANEOUS DETAIL SHEETS (8-1/2" X 11")

4. DRAWING LIST

fh02029b.dgn 18-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION	7/17/02	DLD



NOTES:

1. PREFABRICATED UTILITY BOX & TOP PLATE SHALL BE DESIGNED FOR AASHTO HS-20 WHEEL LOAD & FOR SOIL LOADS GIVEN IN THE GENERAL STRUCTURAL NOTES IN THE DESIGN DRAWINGS.

2. CONSTRACTOR SHALL SUBMIT DRAWINGS & DESIGN CALCULATIONS FOR PREFABRICATED UTILITY BOX & TOP PLATE STAMPED BY A CIVIL ENGINEER REGISTERED IN THE STATE OF ARIZONA.

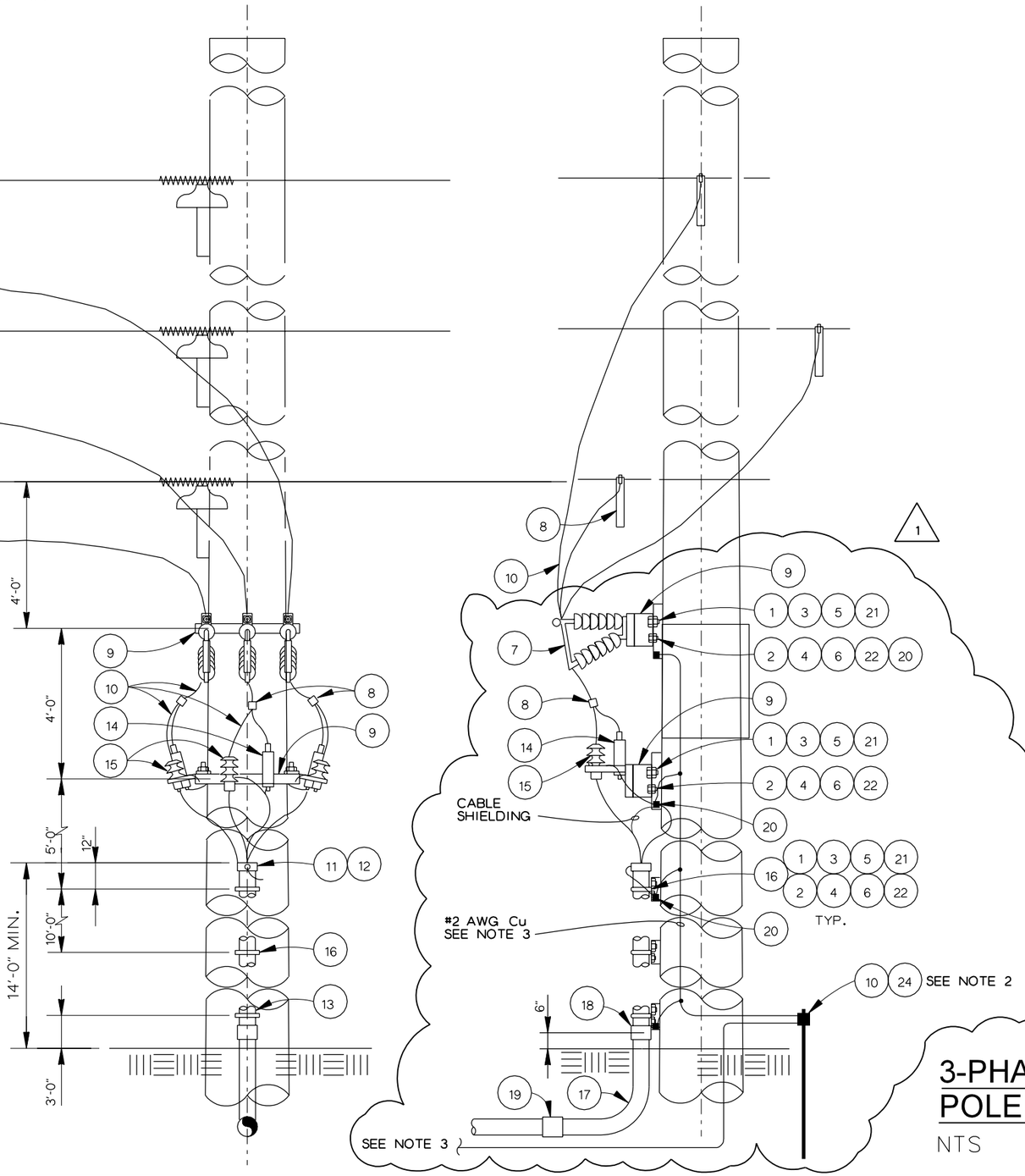
SHALLOW MANHOLE - UTILITY BOX

NTS

2029B

fh16093.dgn 16-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION	7/17/02	DLD



NOTES:

1. PACK CONDUIT TOP WITH DUCT SEAL TO PREVENT ENTRANCE OF MOISTURE.
2. BOND PRIMARY CABLE SHIELDING, ARRESTER GROUND, METAL CONDUIT, EQUIPMENT GROUND ROUTED WITH PRIMARY CABLES AND METALLIC SURFACES TO GROUNDING ELECTRODE INSTALLED AT BASE OF POWER POLE IN ACCORDANCE WITH SECTION 16370A.
3. REFERENCE DETAILS (16453), (16400A) AND SECTION (E) 2-E-6.

1

ITEM	NO.	MATERIAL
1	5	Bolt, machine, 5/8" x reqd length
2	5	Bolt, machine, 1/2" x reqd length
3	5	LOCKNUT, square, MF type, 5/8"
4	5	LOCKNUT, square, MF type, 1/2"
5	5	Washer, sq.2 1/4"x2 1/4"x11/16"hole
6	5	Washer, sq.2 1/4"x2 1/4"x9/16"hole
7	1	Cutout, fuse, GE: 9F34BBT289 or equal
8		Connectors, BURNDY: CRIMPIT, as reqd or Equal 1
9	2	Mounting bracket, ALUMA-FORM TB-EMB-1, or equal
10		#2 Cu
11	1	Cable grip, OZ Gedney, CSBG collar type for 4" IPS or Equal 1
12	1	End bushing, w/ground lug, 6" IPS
13		Conduit, galv rigid stl, 4" IPS, as reqd
14	1	Arrester 9kV, O.B. 212313-7514 or equal
15	1	15kV terminator
16	3	Standoff, ALUMA-FORM: 9-CSO-12 w/STK-6 straps
17	1	90° sweep, 4" IPS, 48" radius
18	1	Coupling, steel, 4" IPS
19	1	Adapter, 4" IPS, Steel to PVC
20	1	Ground connector, Burndy, Type KC Servit Post
21	5	Nut, square, 5/8"
22	5	Nut, square, 1/2"
23	5	Moisture seal, as reqd
24		Ground rod, Clamp, #2 AWG Cu, Staples

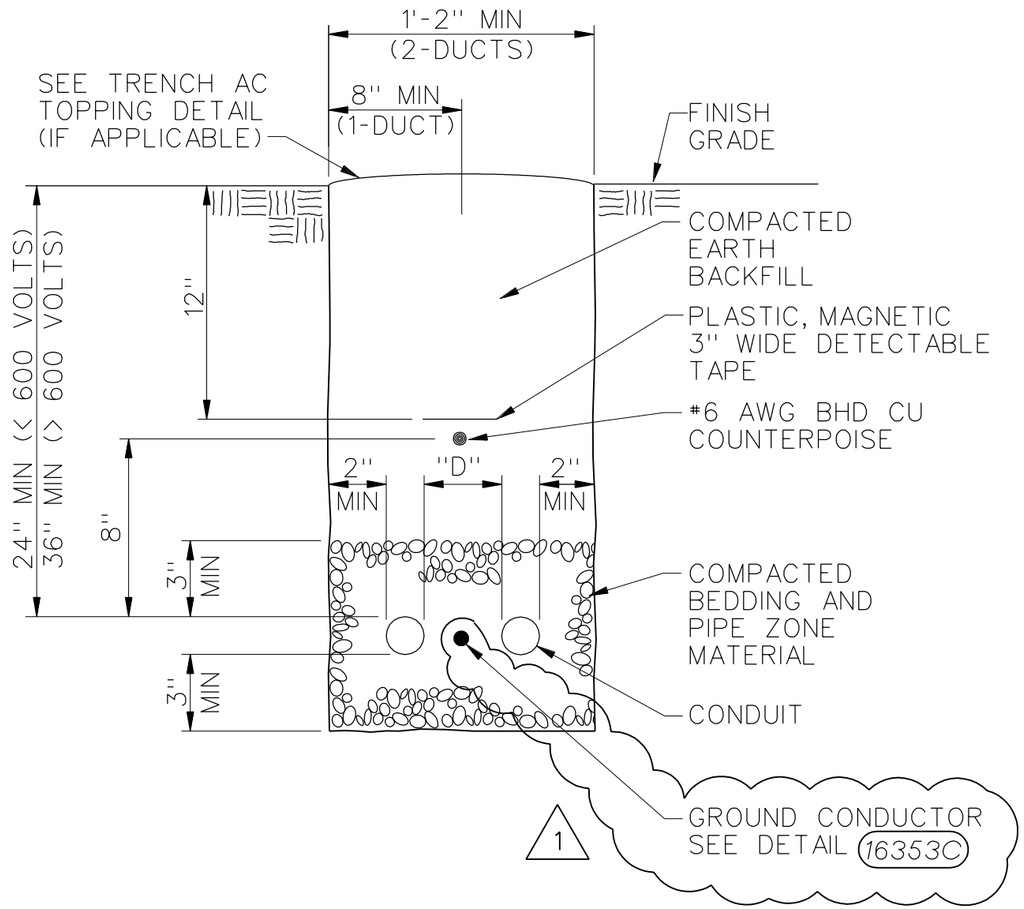
3-PHASE CABLE TERMINAL POLE ASSEMBLY

NTS

16093

fh16093.dgn 16-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION	7/17/02	DLD



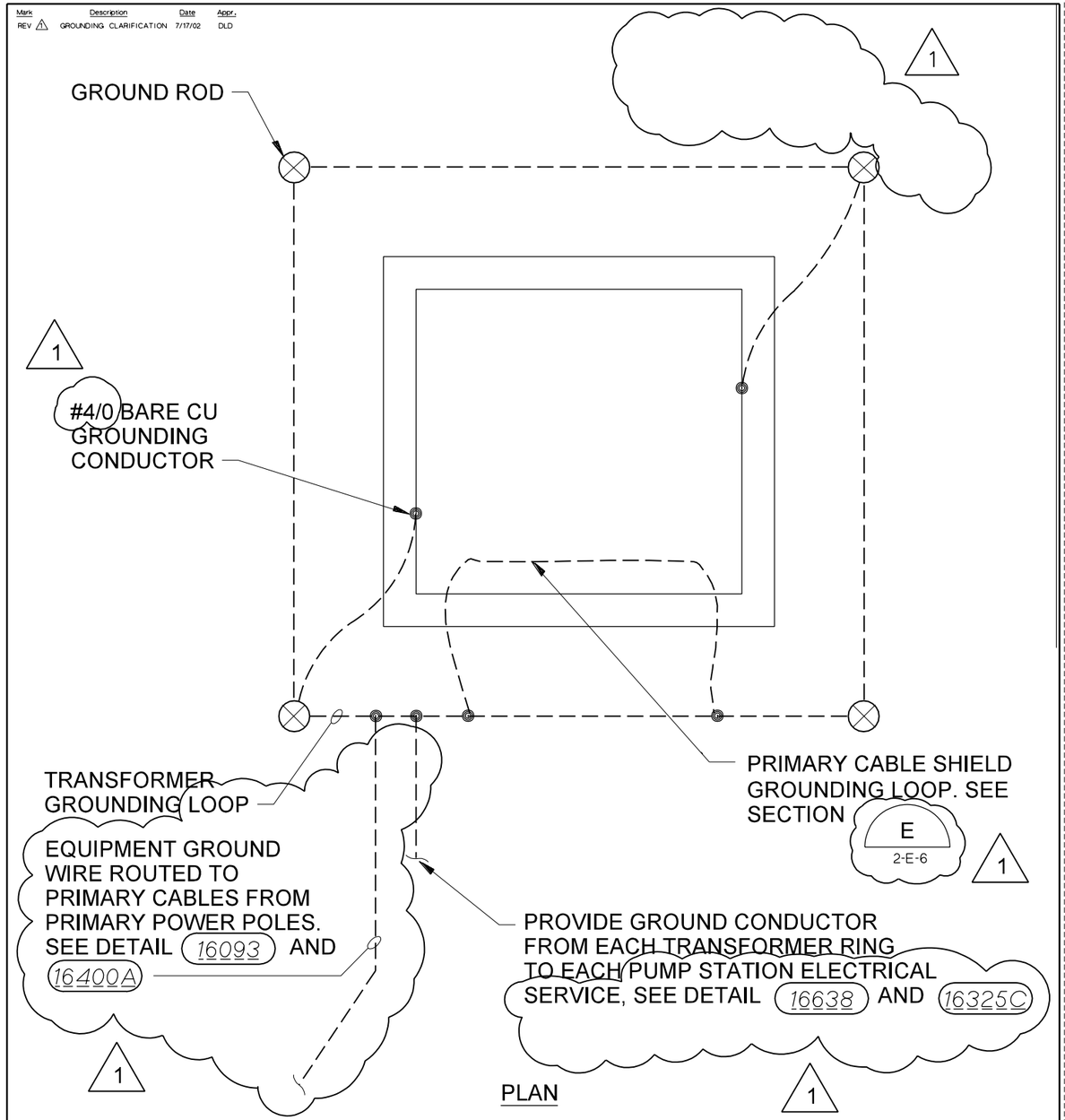
TRENCH AND CONDUIT PLACEMENT

NTS

16325C

fh16453.dgn 18-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION	7/17/02	DLD



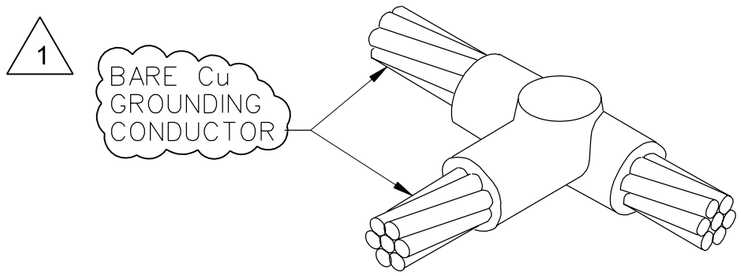
PAD MOUNTED TRANSFORMER AND PAD MOUNTED SWITCH GROUNDING

NTS

16453

fh16635.dgn 16-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION	7/17/02	DLD



"CADWELD" TYPE TA
CABLE TO CABLE TEE
CONNECTION

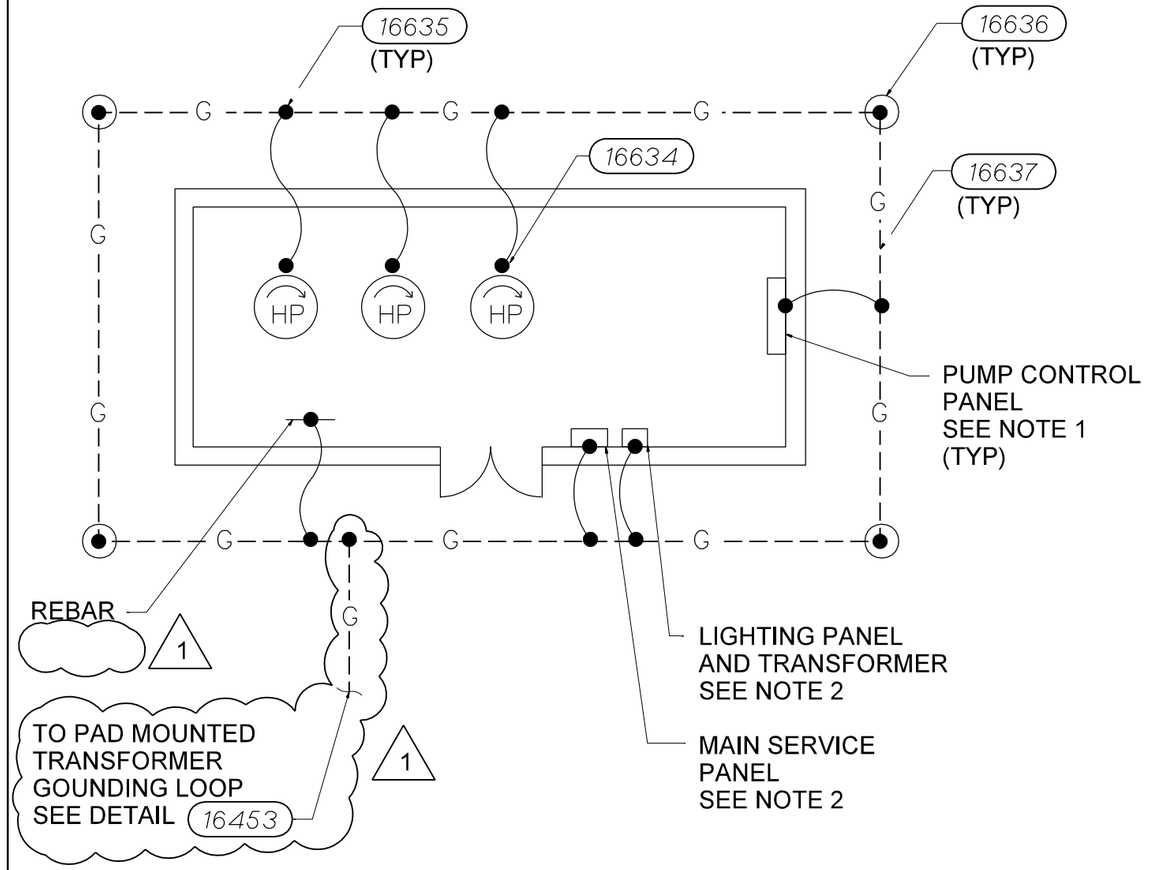
GROUNDING TEE

NTS

16635

fh16638.dgn 18-JUL-2002

Mark	Description	Date	Appr.
REV 1	GROUNDING CLARIFICATION DETAIL REF REMOVED	7/17/02	DLD



NOTES:
1. BUILDING LAYOUT IS DIAGRAMMATIC. VERIFY EQUIPMENT LOCATION WITH PUMP STATION SUPPLIER.

2. COORDINATE LOCATION OF SERVICE EQUIPMENT WITH PUMP STATION SUPPLIER.

PUMP STATION ELECTRICAL SERVICE GROUNDING DETAIL

NTS (TYP OF 3)

16638

INDEX TO SHEETS

SEQUENTIAL NUMBER	SHEET REFERENCE NUMBER	SHEET TITLE
1	G-1	COVER SHEET
2	G-2	PROJECT LOCATION AND VICINITY MAPS
3	G-3	INDEX TO SHEETS
4	G-4	GENERAL ABBREVIATIONS
5	G-5	PIPELINE PLAN AND PROFILE KEY PLAN AND SURVEY DATA
6	G-6	GENERAL NOTES AND MISCELLANEOUS LEGEND
7	G-7	GENERAL STRUCTURAL NOTES AND ABBREVIATIONS
8	G-8	MECHANICAL LEGENDS AND ABBREVIATIONS
9	G-9	ELECTRICAL LEGENDS AND ABBREVIATIONS
10	G-10	INSTRUMENTATION AND CONTROL LEGENDS AND ABBREVIATIONS
11	G-11	HYDRAULIC PROFILE 1 - ALIGNMENT 1 AND 2
12	G-12	HYDRAULIC PROFILE 2 - ALIGNMENT 3 AND 4
13	G-13	HORIZONTAL ALIGNMENT PLAN
14	G-14	HORIZONTAL ALIGNMENT DATA
15	G-15	TEST PIT LOCATIONS SITE PLAN
16	G-16	TEST PIT LOGS
17	G-17	TEST PIT LOGS
18	G-18	TEST PIT LOGS
19	G-19	TEST PIT LOGS
20	G-20	TEST PIT LOGS
21	1-C-1	WWTP NO. 2 EFFLUENT BASIN COVER PLAN
22	1-C-2	WWTP NO. 1 EFFLUENT BASINS COVER PLAN
23	2-C-1	RECLAIMED WATER SUPPLY PUMP STATION NO. 1 PLANS AND DETAILS
24	2-C-2	RECLAIMED WATER SUPPLY PUMP STATION NO. 2 SITE PLAN
25	2-C-3	RECLAIMED WATER SUPPLY PUMP STATION NO. 3 SITE PLAN
26	2-M-1	RECLAIMED WATER SUPPLY PUMP STATION NO. 1 PLAN AND SECTIONS
27	2-SM-2	RECLAIMED WATER SUPPLY PUMP STATION NO. 2 PLAN AND SECTIONS
28	2-SM-3	RECLAIMED WATER SUPPLY PUMP STATION NO. 3 PLAN AND SECTIONS
29	2-I-1	RECLAIMED WATER SUPPLY PUMP STATIONS NO. 1 AND NO. 2 P&ID
30	2-I-2	RECLAIMED WATER SUPPLY PUMP STATION NO. 3 P&ID
31	2-I-3	RECLAIMED WATER SUPPLY PUMP STATION NO. 1 CHLORINE SYSTEM P&ID
32	2-E-1	RECLAIMED WATER SUPPLY PUMP STATIONS NO. 1 & NO. 2 ONE-LINE DIAGRAM
33	2-E-2	RECLAIMED WATER SUPPLY PUMP STATION NO. 3 ONE-LINE DIAGRAM
34	2-E-3	RECLAIMED WATER SUPPLY PUMP STATION NO. 1 ELECTRICAL SITE PLAN
35	2-E-4	RECLAIMED WATER SUPPLY PUMP STATION NO. 2 ELECTRICAL SITE PLAN
36	2-E-5	RECLAIMED WATER SUPPLY PUMP STATION NO. 3 ELECTRICAL SITE PLAN
37	2-E-6	RECLAIMED WATER SUPPLY PUMP STATION ELECTRICAL DETAILS
38	2-P-1	ALIGNMENT 1 PLAN AND PROFILE STA 14+59.07 TO STA 19+00
39	2-P-2	ALIGNMENT 1 PLAN AND PROFILE STA 19+00 TO STA 27+00
40	2-P-3	ALIGNMENT 1 PLAN AND PROFILE STA 27+00 TO STA 37+00
41	2-P-4	ALIGNMENT 1 PLAN AND PROFILE STA 37+00 TO STA 46+00
42	2-P-5	ALIGNMENT 1 PLAN AND PROFILE STA 46+00 TO STA 56+00
43	2-P-6	ALIGNMENT 1 PLAN AND PROFILE STA 56+00 TO STA 66+00
44	2-P-7	ALIGNMENT 1 PLAN AND PROFILE STA 66+00 TO STA 75+60
45	2-P-8	ALIGNMENT 1 PLAN AND PROFILE STA 75+60 TO STA 86+00
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47	2-P-10	ALIGNMENT 1 PLAN AND PROFILE STA 96+00 TO STA 105+00
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US Army Corps of Engineers
Sacramento Division

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Drawn by: L. LOWELL / C. PEDRI
Checked by: D. DeSEMPLE
Submitted by: DAN DeSEMPLE, PE
Project Manager

DEPARTMENT OF THE ARMY
SACRAMENTO DISTRICT, CORPS OF ENGINEERS
SACRAMENTO, CALIFORNIA

CH2MHILL
PHOENIX, ARIZONA

EFFLUENT REUSE SYSTEM (PHASE III)
PN 053971
FORT HUACHUCA, ARIZONA
CONTRACT DACS-10-F-0132K

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AND
MISCELLANEOUS LEGEND

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SECTION 01270A

MEASUREMENT AND PAYMENT

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 615/A 615M	(1996a) Deformed and Plain Billet-Steel Bars for Concrete Reinforcement
ASTM C 127	(1988; R 1993) Specific Gravity and Absorption of Course Aggregate
ASTM C 128	(1997) Specific Gravity and Absorption of Fine Aggregate
ASTM D 1250	(1980; R 1997) Petroleum Measurement Tables

1.2 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-03 Product Data

1.3 BASE PRICE PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sum or unit price payment item, shall be included in the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work required for which separate payment is not otherwise provided.

1.3.1 Mobilization and Demobilization

1.3.1.1 Payment

Payment will be made for costs associated with mobilization and demobilization, as defined in Special Clause PAYMENT FOR MOBILIZATION AND DEMOBILIZATION. Costs for both mobilization and demobilization to be

identified separately.

1.3.1.2 Unit of Measure

Unit of measure: lump sum.

1.3.2 WASTEWATER TREATMENT PLANT NO. 2 PROCESS MODIFICATIONS

1.3.2.1 Payment

Payment will be made for costs associated with all labor, materials, and equipment necessary for the construction of the new Alum Feed System, Alum Feed injection system, new UV Disinfection module, additional lamps to existing UV Disinfection modules, interconnecting piping/valves, electrical, and instrumentation for the WWTP No. 2 process modifications shown on the drawings. The work shall include clearing and grubbing, excavation, trench excavation, structural backfill, reinforced concrete, piping, pumps, leak testing, tank, valves, UV disinfection modules, electrical, instrumentation and controls, and all other miscellaneous items necessary for completion.

1.3.2.2 Unit of Measure

Unit of measure: lump sum.

1.3.3 WASTEWATER TREATMENT PLANT NO. 2 ELECTRICAL MODIFICATIONS

1.3.3.1 Payment

Payment will be made for costs associated with all labor, materials, and equipment necessary for the construction of the overhead power extension, new transformer, new standby generator, new switchgear, and conduit, and wiring associated with the modifications as shown on the drawings. The work shall include clearing and grubbing, excavation, trench excavation, structural backfill, reinforced concrete, electrical, and all other miscellaneous items necessary for completion.

1.3.3.2 Unit of Measure

Unit of measure: lump sum.

1.3.4 WWTP NO. 2 EFFLUENT RESERVOIR COVER SYSTEM

1.3.4.1 Payment

Payment will be made for costs associated with all labor, materials, and equipment necessary for the construction of the effluent cover system at WWTP No. 2 as shown on the drawings. The work shall include excavation, trench excavation, reinforced concrete, reservoir covers, electrical, and all other miscellaneous items necessary for completion.

1.3.4.2 Unit of Measure

Unit of measure: lump sum.

1.3.5 RECLAIMED WATER DISTRIBUTION PUMP STATIONS

1.3.5.1 Payment

Payment will be made for costs associated with labor, materials, and equipment necessary for the construction of Reclaimed Water Supply (RWS) Pump Station No. 1, RWS Pump Station No. 2, RWS Pump Station No. 3, interconnecting piping/valves, electrical, and instrumentation as shown on the drawings. The pump station piping shall extend from the connection to existing 16 inch ductile iron to STA 14+80 for RWS Pump Station No. 1, STA 91+84.43 to STA 92+17.18 for RWS Pump Station No. 2, and STA 27+7.88 to STA 27+73.14 for RWS Pump Station No. 3. The work shall include clearing and grubbing, excavation, reinforced concrete, structural backfill, pumps, piping, valves, pump station enclosures, electrical, instrumentation and controls, grading, surface restoration, and all other miscellaneous items necessary for completion.

1.3.5.2 Unit of Measure

Unit of measure: lump sum.

1.3.6 SEWER SYSTEM REHABILITATION

1.3.6.1 Payment

Payment will be made for costs associated with labor, materials, and equipment necessary for the construction of the sewer system rehabilitation as shown on the Drawings and directed by the CONTRACTING OFFICER'S REPRESENTATIVE. Payment will be made for the Work based on the Contractor's unit price bid for each item in the proposal times the actual quantity installed and in accordance with the Measurement and Payment Parameters listed below.

ITEM	METHOD OF MEASUREMENT
EA	Each - Field Count by the CONTRACTING OFFICER'S REPRESENTATIVE
LF	Linear Foot - Field Measure by the CONTRACTING OFFICER'S REPRESENTATIVE
LS	Lump Sum - Unit is one; no measurement will be made
TON	Ton - Weight Measure by Scale (2,000 pounds)

Cleaning and Closed Circuit Television Inspection

Measurement and payment shall be based on the actual length of sanitary sewers initially cleaned and internally inspected by closed circuit television (CCTV), as ordered and accepted by the CONTRACTING OFFICER'S REPRESENTATIVE. Payment will be made only after submission of acceptable closed circuit television inspection logs and video tapes. All measurements shall be made from center of manhole to center of manhole or cleanout, except that measurement for sewers in which cleaning and CCTV inspection was partially completed due to obstruction or other factors shall be based upon the footage of sewers actually CCTV inspected, as determined by the CONTRACTING OFFICER'S REPRESENTATIVE. No additional payment shall be made for cleaning and retelevising sewer reaches to obtain an acceptable quality and no additional payment shall be made for final acceptance cleaning and inspection.

Trench Stabilization

Measurement and payment will be based on unit price bid per ton and will include over excavation and disposal of unsuitable

material, furnishing and installing trench stabilization material and all related Work. Payment will be made for trench stabilization material placed at only those locations directed by the CONTRACTING OFFICER'S REPRESENTATIVE. Trip tickets shall be signed by the Contractor and the CONTRACTING OFFICER'S REPRESENTATIVE and submitted to the CONTRACTING OFFICER'S REPRESENTATIVE at the end of each working day.

Spot Repairs

Measurement and payment shall be made for each spot repair up to and including the first 20 feet of length and will be made on the unit price per lineal foot bid for additional length over the initial 20 feet. No deduction will be made for spot repairs less than 20 feet in length. The approximate locations and lengths of spot repairs are shown on the drawings. The final locations and lengths shall be determined by the CONTRACTING OFFICER'S REPRESENTATIVE based on the closed circuit television inspection and visual inspection after excavation prior to the spot repair being performed.

Payment shall include full compensation for all preparation work; cleaning and grubbing; sewer flow control; dewatering; locating and protecting existing utilities; trench excavation and backfill; shoring, sheeting and bracing; furnishing and installing new pipe; connecting new pipe to the existing pipe or manhole; restoring the surface; joint testing; final cleaning and CCTV inspections; and all other Work to complete the spot repair and restore sewer service.

Service Connection Rehabilitation

Measurement and payment shall be made at the bid price for each service connection replaced or repaired. Payment shall include full compensation for all Work to complete the repair or replacement of each active service connection from the gravity sewer main to ten feet from the main and shall include full compensation for all Work including locating each service connection and verifying service (active or abandoned); providing temporary service; locating and protecting existing utilities; sewer flow control; cleaning and grubbing; sheeting, shoring, and bracing; excavating and backfilling; cutting intruding service connection flush with the inside of the sewer main; disposing of removed pipe and waste materials; dewatering; furnishing and installing new service connection tee and pipe; making connections to the existing system; removing and restoring surface features, including curbs and gutters, sidewalks, driveways, paving, and landscaping; and all other Work to make a complete repair or replacement and restoring service.

No separate payment for disconnecting and plugging abandoned service connections will be made.

Replace Manhole 3-14

Measurement and payment shall be made at the lump sum price bid for removal and replacement of Manhole 3-14 including sewer flow control; removal and disposal of existing manhole and pipe materials; excavation; sheeting, shoring and bracing; flow

control; locating and protecting existing utilities; dewatering; overexcavating and placing compacted base rock; furnishing and installing 20 feet of new pipe upstream from the new manhole; connection of new pipe to the existing pipe as shown; connection of pipes to the manhole; manhole base and sections; ring extensions; frame and cover; forming new flow channels; backfill; surface restoration; and all other Work to make a complete manhole and restore service.

Raising Manhole Frame and Cover

Payment to raise manhole frames and covers will be made at the unit price bid for each manhole frame and cover raised as approved by the CONTRACTING OFFICER'S REPRESENTATIVE. Payment shall include full compensation for removing and salvaging the existing frame and cover, installing new grade rings; resetting the salvaged frame and cover; and restoring the surface features. Additional payment will be made at the unit price bid per lineal foot for installing manhole riser sections where required. Payment shall include full compensation for excavating; removing and salvaging the existing manhole cone; preparing the existing manhole riser sections; furnishing and installing new riser sections; replacing the salvaged cone; backfilling and any additional cost associated with removing and restoring surface features. In the event that the existing cone can not be salvaged then payment will be made for furnishing and installing a new eccentric cone at the unit price per lineal foot bid for this item.

Replace Shallow Manholes 3-12B, 5-10, and 5-11

Payment to remove and replace existing manholes 3-12B, 5-10, 5-11 shall be made at the unit price bid for each manhole replaced. Payment shall include full compensation for sewer flow control; dewatering; locating and protecting existing utilities; excavation; sheeting, shoring, and bracing; base rock, constructing manhole base; furnishing and installing manhole vault and manhole frame and cover; forming flow channel; furnishing and installing 10 feet of pipe both upstream and downstream from the new manhole; connecting new pipe to the new manhole; connecting new pipe to the existing pipe; surface restoration; and all other Work to make a complete installation and restore service.

Construct New Manhole 3-10B over Existing Sewer

Payment to construct manhole 3-10B over the existing sewer shall be made at the lump sum price bid. Payment shall include full compensation for sewer flow control; dewatering; locating and protecting existing utilities; excavation; sheeting, shoring, and bracing; base rock, constructing manhole base; furnishing and installing manhole vault and manhole frame and cover; forming flow channel; furnishing and installing 10 feet of pipe both upstream and downstream from the new manhole; connecting new pipe to the new manhole; connecting new pipe to the existing pipe; surface restoration; and all other Work to make a complete installation and restore service.

Install New 10-inch-diameter Pipeline between Manholes 8-66 and 8-69

Payment for installation of the new pipeline from Manhole 8-66 to

Manhole 8-69 will be made on the lump sum price bid. Payment shall include all work to complete the 10-inch-diameter ductile pipe installation between manhole 8-66 and manhole 8-69 including but not limited to trench excavation and backfill; flow control; dewatering; pipe support system; furnishing, installing, and testing the new ductile iron pipe; abandoning the existing pipe between manholes 8-66 and 8-69 as shown; removing manholes 8-67 and 8-68 and salvaging materials; backfilling and grading around abandoned manholes; connecting new ductile iron pipe to manholes 8-66 and 8-69; plugging the existing pipes to be abandoned at manholes 8-66 and 8-69; reforming flow channels in manholes 8-66 and 8-69; restoring the surface; and all other work to make a complete installation.

Replace Existing Sewer Pipe with PVC Pipe

Payment for Work to replace existing sewer pipe between manholes or manholes and cleanouts shall be made at the unit price bid per linear foot of pipe, using open cut excavation. Payment shall constitute full compensation for furnishing all labor, materials, equipment, tools and incidentals required for the satisfactory installation of new PVC pipe, including sewer flow control; removing and disposing of existing pipe; dewatering; excavating and backfilling; sheeting, shoring, and bracing; breaking into existing manholes and connecting new PVC pipe to existing manholes; removing and restoring surface features, including curbs and gutters, sidewalks, pavement and landscaping; final acceptance air testing; final cleaning and CCTV inspection; restoring service and all other tasks and costs incidental and necessary to complete the items as specified herein and as indicated on the Drawings.

Payment will be based on the actual number of feet of PVC pipe installed, as measured by the CONTRACTING OFFICER'S REPRESENTATIVE. The pipe will be measured horizontally from center-to-center of manholes or to the end of the pipe, whichever is applicable.

Payment for conducting air pressure tests, including furnishing and installing all equipment and materials and conducting the pressure test in the presence of the CONTRACTING OFFICER'S REPRESENTATIVE, including all repairs required if the air test shall fail and retesting failed sections after repair, shall be included in the unit price per linear foot bid.

No payment will be made on any section of pipe deemed unsatisfactory due to excessive leakage, unsatisfactory line and grade, or any other cause until such defects have been corrected in accordance with the intent of these Contract Documents.

If, within warranty period, any section of the sewer system, although originally accepted, is actually not acceptable due to subsequent excessive leakage, or any other defects, the Contractor shall repair or replace the affected portion at no cost to the Government. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

Payment for rehabilitation of defective service connections will be made separately under Service Connection Rehabilitation. No

payment will be made for abandoned service connections.

No separate payment will be made for spot repairs in manhole to manhole segments of sewers to be replaced and paid for under this bid item.

Replace Existing Sewer with HDPE Pipe

Payment for work installing HDPE by pipe bursting trenchless technologies shall be made at the unit bid price per linear foot of pipe replaced and shall constitute full compensation for furnishing all labor, materials, equipment, tools and incidentals required for the satisfactory installation of the polyethylene pipe, including preparation, sewer flow control; dewatering; excavating and backfilling of insertion and/or machine pits; locating and protecting existing utilities; sheeting, shoring, and bracing; removing obstructions within the existing pipe that are detrimental to the pipe bursting process and the finished pipe; breaking into the existing pipe to allow installations of the HDPE pipe; locating and disconnecting active service connections; providing temporary sewer service to buildings as required; furnishing and installing new HDPE pipe; connecting new pipe to manholes; restoring manholes not designated for replacement; removing and restoring surface features, including curbs and gutters, sidewalks, pavement and landscaping; final acceptance air testing; final cleaning and CCTV inspection; and all other tasks and costs incidental and necessary to complete the items as specified herein and as indicated on the Drawings.

Payment will be based on the actual number of feet of pipe installed, as measured by the CONTRACTING OFFICER'S REPRESENTATIVE. The pipe will be measured horizontally from center-to-center of manholes or to the end of the pipe, whichever is applicable.

Payment for conducting air pressure tests, including furnishing and installing all equipment and materials and conducting the pressure test in the presence of the CONTRACTING OFFICER'S REPRESENTATIVE, including all repairs required if the air test shall fail and retesting failed sections after repair, shall be included in the unit price per linear foot bid.

No payment will be made on any section of pipe deemed unsatisfactory due to excessive leakage, unsatisfactory line and grade, or any other cause until such defects have been corrected in accordance with the intent of these Contract Documents.

If, within warranty period, any section of the sewer system, although originally accepted, is actually not acceptable due to subsequent excessive leakage, or any other defects, the Contractor shall repair or replace the affected portion at no cost to the Government. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

Payment for disconnecting and reconnecting active service connections will be made on the unit price bid for each.

No separate payment will be made for abandoned service connections.

Line Existing Pipe with Cured-in-Place Pipe

Payment for work installing cured-in-place pipe (CIPP) shall be made at the bid price per linear foot of pipe lined. Payment shall constitute full compensation for furnishing all labor, materials, equipment, tools and incidentals required for the satisfactory installation of the CIPP lining, including preparation, sewer flow control; dewatering; locating active service connections; providing temporary sewer service to buildings where required; excavating and backfilling; sheeting, shoring, and bracing; removing roots, repairing broken pipe and removing other obstructions that are detrimental to the lining process and finished product; breaking into the existing pipe or preparing manholes to allow installations of the pipe; furnishing and installing CIPP materials; sealing pipe at manholes, if required; restoring manholes not designated for replacement; restoring service connections; removing and restoring surface features, including curbs and gutters, sidewalks, pavement and landscaping; final acceptance air testing; final cleaning and CCTV inspection; and all other tasks and costs incidental and necessary to complete the items as specified herein and as indicated on the Drawings.

Payment will be based on the actual number of feet of CIPP installed, as measured by the CONTRACTING OFFICER'S REPRESENTATIVE. The pipe will be measured horizontally from center-to-center of manholes or to the end of the pipe, whichever is applicable.

Payment for conducting air pressure tests, including furnishing and installing all equipment and materials and conducting the pressure test in the presence of the CONTRACTING OFFICER'S REPRESENTATIVE, including all repairs required if the air test shall fail and retesting of failed sections after repair, shall be included in the unit price per linear foot bid.

No payment will be made on any section of pipe deemed unsatisfactory due to excessive leakage, unsatisfactory line and grade, or any other cause until such defects have been corrected in accordance with the intent of these Contract Documents.

If, within warranty period, any section of the sewer system, although originally accepted, is actually not acceptable due to subsequent excessive leakage, or any other defects, the Contractor shall repair or replace the affected portion at no cost to the Government. It is understood that if the Contractor fails to do such work as required, the Surety shall be liable for said costs of repair or replacement.

Payment for rehabilitation of defective service connections will be made separately under Service Connection Rehabilitation. No separate payment will be made for abandoned service connections.

Payment for restoring services will be considered incidental to CIPP installation and no separate payment shall be made.

1.3.6.2 Unit of Measure

Unit of Measure: Unit Price

a. Weighing, measuring, and metering devices used to measure quantity of materials for Work shall be suitable for purpose intended and conform to tolerances and specifications in the National Institute of Standards and Technology, Handbook 44.

b. Whenever pay quantities of material are determined by weight, the material shall be weighed on scales furnished by Contractor and certified accurate by the state agency responsible. A weight or load slip shall be obtained from the weigher and delivered to the CONTRACTING OFFICER'S REPRESENTATIVE at the point of delivery of the material. All weight or load slips shall be signed by the Contractor and the CONTRACTING OFFICER'S REPRESENTATIVE on a daily basis.

c. Vehicles used to haul material being paid for by weight shall be weighed empty daily and at such additional times as required by the CONTRACTING OFFICER'S REPRESENTATIVE. Each vehicle shall bear a plainly legible identification mark.

1.3.7 RECLAIMED WATER DISTRIBUTION SYSTEM PIPELINE

1.3.7.1 Payment

Payment will be made for costs associated with labor, materials, and equipment necessary for the construction of the reclaimed water distribution pipeline Alignment 1 (STA 14+80 to STA 151+36.43), Alignment 2 (STA 10+70 to STA 51+49.78), Alignment 3 (STA 10+00 to STA 122+62.68), and Alignment 4 (STA 10+00 to STA 36+10.00). Construction activities shall include clearing and grubbing, trench excavation, locating underground utilities potholling for undergound utilities, processing on-site material or importing material required for backfill, including CLSM, bedding, connections to existing piping, piping, fittings, air/vacuum valves, marking tape, tracor wire, surface restoration, compacting, grading, connecting to new RWS Pump Stations, connecting to existing irrigation systems, leak testing of the pipe, and all miscellaneous items necessary for completion of the reclaimed water distribution system pipeline.

1.3.7.2 Unit of Measure

Unit of Measure: lump sum.

1.3.8 STORM WATER POLLUTION PREVENTION

1.3.8.1 Payment

Payment will be made for costs associated with labor, materials and equipment necessary for providing storm water pollution prevention as specified in Section 01356A "Storm Water Pollution Prevention Measures".

1.3.8.2 Unit of Measure

Unit of Measure: lump sum.

1.4 OPTION PAYMENT ITEMS

Payment items for the work of this contract for which contract lump sum payments will be made are listed in the BIDDING SCHEDULE and described below. All costs for items of work, which are not specifically mentioned to be included in a particular lump sump payment item, shall be included in

the listed lump sum item most closely associated with the work involved. The lump sum price and payment made for each item listed shall constitute full compensation for furnishing all plant, labor, materials, and equipment, and performing any associated Contractor quality control, environmental protection, meeting safety requirements, tests and reports, and for performing all work for which separate payment is not otherwise provided.

1.4.1 1.4.1 WWTP No. 1 Effluent Reservoir Cover System (Bid Option 1)

1.4.1.1 Payment

Payment will be made for costs associated with all labor, materials, and equipment necessary for the construction of the effluent cover systems at WWTP No. 1 as shown on the drawings. The work shall include excavation, trench excavation, reinforced concrete, reservoir covers, electrical, and all other miscellaneous items necessary for completion.

1.4.1.2 Unit of Measure

Unit of Measure: lump sum.

1.4.2 Reclaimed Water Distribution System Pipeline Alignment 2, STA 51+50 to STA 97+24.02 (Bid Option 2)

1.4.2.1 Payment

Payment will be made for costs associated with labor, materials, and equipment necessary for the construction of the reclaimed water distribution pipeline Alignment 2 from STA 51+49.78 to STA 97+57.28. Construction activities shall include clearing and grubbing, trench excavation, locating underground utilities, potholling for underground utilities, processing on-site material or importing material required for backfill, including CLSM, bedding, connections to existing piping, piping, fittings, air/vacuum valves, marking tape, surface restoration, compacting, grading, connecting to existing irrigation systems, leak testing of the pipe, and all miscellaneous items necessary for completion of Alignment 2 of the reclaimed water distribution system pipeline.

1.4.2.2 Unit of Measure

Unit of Measure: lump sum.

1.4.3 Sewer System Rehabilitation (Bid Options 3-11)

1.4.3.1 Payment

Payment will be made for costs associated with labor, materials, and equipment necessary for the construction of the sewer rehabilitation options as shown on the Drawings and directed by the CONTRACTING OFFICER'S REPRESENTATIVE. Payment will be made for the work based on the Contractor's unit price bid for each item in the proposal times the actual quantity installed and in accordance with the applicable Measurement and Payment Parameters specified in 1.3.6.1.

1.4.3.2 Unit of Measure

As specified in 1.3.6.2.

PART 2 PRODUCTS (Not Applicable)

PART 3 EXECUTION (Not Applicable)

-- End of Section --

(H) Accident Reporting:

In addition to the requirements for reporting accidents in accordance with EM 385-1-1, Section 1, the Prime Contractor will submit at the 50% point and 100% of project completion, a written summary of worker's compensation claims filed by workers on the project. The report will include all subcontractors. The main report covering the Prime Contractor claims will be certified as "correct and true" by the Contractor's compensation insurance carrier. The same certification will be required for subcontractor reports.

(I)CONTRACTOR SAFETY PERSONNEL REQUIREMENTS". Full-time, onsite, safety coverage by contractor shall be required for the life of the contract. The contractor shall employ, to cover all hours of work at the project site(s), at least one Safety and Health Person to manage the Contractor's safety program; duties which are not germaine to the safety program shall not be assigned to this person

1.7 PLANNED UTILITY OUTAGES AND STREET CLOSURES:

All utility outages and street closures shall be of as short a duration as possible and shall be scheduled as far in advance as possible with the Contracting Officer, in no case less than **(14)** days before the outage or closure. The Contractor shall obtain in writing from the Contracting Officer a statement or schedule giving the permissible times of outages or closures for particular installations and the maximum time allowed for each. The Contractor shall strictly observe such schedules and will be held responsible for any violations. The Contractor shall schedule work requiring disruption of utility distribution systems, electrical power, gas, sewage, water and telephone. Contractor shall schedule this work such that work starts and is completed with continuous effort. For the convenience of the Government, the Contractor shall conduct outages on weekends or during non-duty hours. With the permission of Contracting Officer, the Contractor shall work overtime for outages and shall not disrupt government operations.

1.8 TIME EXTENSIONS FOR UNUSUALLY SEVERE WEATHER:

(A) This provision specifies the procedure for the determination of time extensions for unusually severe weather in accordance with the CONTRACT CLAUSE, Section 00700, entitled "DEFAULT (FIXED-PRICE CONSTRUCTION)". In order for the Contracting Officer to award a time extension under this clause, the following conditions must be satisfied:

(1) The weather experienced at the project site during the contract period must be found to be unusually severe, that is, more severe than the adverse weather anticipated for the project location during any given month.

(2) The unusually severe weather must actually cause a delay to the completion of the project. The delay must be beyond the control and without the fault or negligence of the Contractor.

(B) The following schedule of monthly anticipated adverse weather delays is based on National Oceanic and Atmospheric Administration (NOAA) or similar data for the project location and will constitute the base line for monthly weather time evaluations. The Contractor's progress schedule must reflect these anticipated adverse weather delays in all weather dependent activities.

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DIVISION 02 - SITE WORK

SECTION 02316A

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS

-- End of Section Table of Contents --

SECTION 02316A

EXCAVATION, TRENCHING, AND BACKFILLING FOR UTILITIES SYSTEMS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM C131	Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine
ASTM D 1556	(1990; R 1996) Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	(1998) Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/cu. ft. (2,700 kN-m/cu. m.))
ASTM D 2487	(1998) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2922	(1996) Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	(1988; R1996el) Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 3740	(1999c) Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction
ASTM D 5255	(1997e1) Certification of Personnel Engaged in the Testing of Soil and Rock

1.2 DEGREE OF COMPACTION

Degree of compaction shall be expressed as a percentage of the maximum dry density obtained by the test procedure presented in ASTM D 1557.

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When

used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-06 Test Reports

Field Density Tests
Testing of Backfill Materials; G, RE

Copies of all laboratory and field test reports within 24 hours of the completion of the test.

PART 2 PRODUCTS

2.1 MATERIALS

2.1.1 Satisfactory Materials

Satisfactory materials shall comprise any materials classified by ASTM D 2487 as GW, GP, GM, GP-GM, GW-GM, GC, GP-GC, GM-GC, SW, SP, SM, SW-SM,SC, SW-SC, SP-SM, SP-SC, CL, ML, CL-ML,. Satisfactory material shall have a maximum particle size of no larger than 3 inches in any dimension.

2.1.2 Unsatisfactory Materials

Materials which do not comply with the requirements for satisfactory materials are unsatisfactory. Unsatisfactory materials also include man-made fills, trash, refuse, or backfills from previous construction. Unsatisfactory material also includes material classified as satisfactory which is unstable, contains root and other organic matter, and stones larger than 3 inches. The Contracting Officer shall be notified of any contaminated materials.

2.1.2.1 Unstable Materials

Unstable materials are unsatisfactory and are materials that rut or shove under the wheels of construction equipment or are too wet to be compacted to the densities specified herein. No additional compensation shall forthcoming for the excavation, disposal, replacement, bridging, or conditioning of unstable materials.

2.1.2.2 Oversized Materials

Oversized plus 3-inch materials are unsatisfactory for utility work fill and backfill. The area of construction contains large quantities of oversized materials. Cobble and boulder-sized materials often make up over 50 percent of the soil matrix. No additional compensation shall be forthcoming for the disposal and replacement or processing soils containing oversized materials.

2.1.3 Unyielding Material

Unyielding material shall consist of cemented gravelly soils which require large sized track mounted equipment for excavation. Unyielding materials exist in the construction area. No additional compensation shall be forthcoming for the equipment procurement or other incidentals required to rip, process, and excavate unyielding materials.

2.1.4 Trench Stabilization Material

Trench stabilization material shall be used to provide bridging when unstable materials are encountered in the bottom of excavations. Trench stabilization materials of angular hard and durable well-graded fine to coarse gravel material. Trench stabilization material shall have a loss of no greater than 50 percent when tested with 500 revolutions in accordance with ASTM C 131.

2.1.5 Pipe Zone Material

Pipe zone material shall be used for bedding and initial backfill for the proposed high density polyethylene (HDPE) pipe. Pipe zone material consist of hard durable particles which have a loss of no greater than 40 percent when tested with 500 revolutions in accordance with ASTM C 131. Pipe zone material shall meet the following additional requirements:

Sieve Size	Percent Passing (by weight)
(3/4-inch)	100
(No. 4)	38-65
(No.8)	25-60
(No. 30)	10-40
(No. 200)	<5
PI Max	5

2.2 PLASTIC MARKING TAPE

Plastic marking tape shall be acid and alkali-resistant polyethylene film, 6 inches wide with minimum thickness of 0.004 inch. Tape shall have a minimum strength of 1750 psi lengthwise and 1500 psi crosswise. The tape shall be manufactured with integral wires, foil backing or other means to enable detection by a metal detector when the tape is buried up to 3 feet deep. The tape shall be of a type specifically manufactured for marking and locating underground utilities. The metallic core of the tape shall be encased in a protective jacket or provided with other means to protect it from corrosion. Tape color shall be as specified in TABLE 1 and shall bear a continuous printed inscription describing the specific utility.

TABLE 1. Tape Color

Blue:	Water Systems
Green:	Sewer Systems

PART 3 EXECUTION

3.1 EXCAVATION

Excavation shall be performed to the lines and grades indicated. Overexcavation shall be sufficient to provide clear space for bedding (pipe zone material) in the trench bottom. During excavation, material satisfactory for backfilling shall be stockpiled in an orderly manner at a distance from the banks of the trench equal to 1/2 the depth of the excavation, but in no instance closer than 3 feet. Excavated material not required or not satisfactory for backfill shall be removed from the site and disposed-of as directed. Grading shall be done as may be necessary to prevent surface water from flowing into the excavation, and any water

accumulating shall be removed to maintain the stability of the bottom and sides of the excavation. Unauthorized overexcavation shall be backfilled in accordance with paragraph BACKFILLING AND COMPACTION at no additional cost to the Government.

3.1.1 Trench Excavation Requirements

The trench shall be excavated as recommended by the manufacturer of the pipe to be installed. Trench walls below the top of the pipe shall be sloped, or made vertical, and of such width as recommended in the manufacturer's installation manual. Where no manufacturer's installation manual is available, trench walls shall be made vertical. Trench walls more than 5 feet high shall be shored, cut back to a stable slope, or provided with equivalent means of protection for employees who may be exposed to moving ground or cave in. Vertical trench walls more than 6 feet high shall be shored. Trench walls which are cut back shall be excavated to at least the angle of repose of the soil. Special attention shall be given to slopes which may be adversely affected by weather or moisture content. The minimum trench width shall be 24 inches plus pipe outside diameter (O.D.) at the springline for pipes of less than 18 inches inside diameter.

3.1.1.1 Bottom Preparation

The bottoms of trenches shall be overexcavated and accurately graded to provide uniform bearing and support for bedding material (pipe zone material).

3.1.1.2 Removal of Unstable Material

Where unstable material is encountered in the bottom of the trench, such material shall be removed to the depth directed and replaced to the proper grade with trench stabilization material. Removal and replacement of unstable material shall be performed without additional cost to the Government.

3.1.1.3 Excavation for Appurtenances

Excavation for manholes, catch-basins, anchors, inlets, or similar structures shall be of sufficient size to permit the placement and removal of forms for the full length and width of structure footings and foundations as shown. Unyielding material shall be cleaned of loose debris and cut to a firm surface either level, stepped, or serrated, as shown or as directed. Removal of unstable material shall be as specified above. When concrete or masonry is to be placed in an excavated area, special care shall be taken not to disturb the bottom of the excavation. Excavation to the final grade level shall not be made until just before the concrete or masonry is to be placed.

3.1.1.4 Jacking, Boring, and Tunneling

Unless otherwise indicated, excavation shall be by open cut except that sections of a trench may be jacked, bored, or tunneled if, in the opinion of the Contracting Officer, the pipe, cable, or duct can be safely and properly installed and backfill can be properly compacted in such sections. The Contractor shall locate all existing underground utilities and be responsible for the repair of breakages and any outages.

3.1.2 Stockpiles

Stockpiles of satisfactory and unsatisfactoryand wasted materials shall be placed and graded as specified. Stockpiles shall be kept in a neat and well drained condition, giving due consideration to drainage at all times. The ground surface at stockpile locations shall be cleared, grubbed, and sealed by rubber-tired equipment, excavated satisfactory and unsatisfactory materials shall be separately stockpiled. Stockpiles of satisfactory materials shall be protected from contamination which may destroy the quality and fitness of the stockpiled material. If the Contractor fails to protect the stockpiles, and any material becomes unsatisfactory, such material shall be removed and replaced with satisfactory material from approved sources at no additional cost to the Government. Locations of stockpiles of satisfactory materials shall be subject to prior approval of the Contracting Officer.

3.2 BACKFILLING AND COMPACTION

Backfill material shall consist of satisfactory material and pipe zone material as required. Backfill shall be placed in layers not exceeding 6 inches loose thickness for compaction by hand operated machine compactors, and 8 inches loose thickness for other than hand operated machines, unless otherwise specified. Each layer shall be compacted to at least 90 percent maximum dry density , unless otherwise specified.

3.2.1 Trench Backfill

Trenches shall be backfilled to the grade shown. The trench shall be backfilled to 2 feet above the top of pipe prior to performing the required pressure tests. The joints and couplings shall be left uncovered during the pressure test.Trench backfilling shall not be completeduntil all specified tests are performed. Pressure tests shall not be performed until thrust blocks have been allowed to cure for a minimum of 72 hours.

3.2.1.1 Replacement of Unyielding Material

Unyielding material removed from the bottom of the trench shall be replaced with pipe zone material.

3.2.1.2 Replacement of Unstable Material

Unstable material removed from the bottom of the trench or excavation shall be replaced with trench stabilization material placed in layers not exceeding 6 inches loose thickness.

3.2.1.3 Bedding and Initial Backfill

Bedding shall be a minimum of 4 inches in thickness . Initial backfill material shall be placed and compacted with approved tampers to a height of at least 12 inches above the utility pipe or conduit. The backfill shall be brought up evenly on both sides of the pipe for the full length of the pipe. Care shall be taken to ensure thorough compaction of the fill under the haunches of the pipe.

3.2.1.4 Final Backfill

The remainder of the trench, except for special materials for roadways, shall be filled with satisfactory material. Backfill material shall be placed and compacted as follows:

a. Roadways: Final backfill shall be placed and compacted to a minimum of 95 percent of the laboratory maximum dry density in 8-inch maximum loose lifts. Water flooding or jetting methods of compaction will not be permitted.

b. Sidewalks, Turfed or Seeded Areas and Miscellaneous Areas: Backfill shall be deposited in layers of a maximum of 12 inch loose thickness, and compacted to 90 percent maximum dry density. Compaction by water flooding or jetting will not be permitted. This requirement shall also apply to all other areas not specifically designated above.

3.2.2 Backfill for Appurtenances

After the manhole, catchbasin, inlet, or similar structure has been constructed and the concrete has been allowed to cure for a minimum of 5 days, backfill shall be placed in such a manner that the structure will not be damaged by the shock of falling earth. The backfill material shall be deposited and compacted as specified for final backfill, and shall be brought up evenly on all sides of the structure to prevent eccentric loading and excessive stress.

3.3 SPECIAL REQUIREMENTS

Special requirements for both excavation and backfill relating to the specific utilities are as follows:

3.3.1 Water Lines

Trenches shall be of a depth to provide a minimum cover of 3 feet from the existing ground surface, or from the indicated finished grade, whichever is lower, to the top of the pipe.

3.3.2 Plastic Marking Tape

Warning tapes shall be installed directly above the pipe, at a depth of 18 inches below finished grade unless otherwise shown.

3.4 TESTING

Testing shall be the responsibility of the Contractor and shall be performed at no additional cost to the Government.

3.4.1 Testing Facilities

Tests shall be performed by an approved commercial testing laboratory or may be tested by facilities furnished by the Contractor. No work requiring testing will be permitted until the facilities have been inspected and approved by the Contracting Officer. Testing facilities shall meet the requirements outlined in ASTM D 3740 and testing personnel shall be certified in accordance with ASTM D 5255.

3.4.1.1 Test Results

Field test information shall be submitted on a "Density Test Log" which shall include but not be limited to the following: test date, test number, feature of work, station/location, offset, elevation, inplace dry unit weight, moisture content, percent compaction, pass or fail, test method, and gradation. Copies of test results shall be furnished to the Contracting

Officer within 24 hours of completion of tests. Results shall verify that materials comply with this specification. When a material source is changed, the new material will be tested for compliance. When deficiencies are found, the initial analysis shall be repeated and the material already placed shall be retested to determine the extent of unacceptable material. All in-place unacceptable material shall be replaced or modified as directed by the Contracting Officer.

3.4.2 Testing of Backfill Materials

Classification of backfill materials shall be determined in accordance with ASTM D 2487 and the moisture-density relations of soils shall be determined in accordance with ASTM D 1557. A minimum of one soil classification and one moisture-density relation test shall be performed on each different type of material used for pipe zone material and backfill.

3.4.3 Field Density Tests

Tests shall be performed in sufficient numbers to ensure that the specified density is being obtained. A minimum of one field density test per lift of backfill for every 300 feet of installation shall be performed. One moisture density relationship shall be determined for every 500 cubic yards of material used. Miscellaneous areas such as reservoir cover anchor trenches shall be randomly tested once per each lift of 200 linear feet of backfill material. Field in-place density shall be determined in accordance with ASTM D 1556 and/or ASTM D 2922. When ASTM D 2922 is used, the calibration curves shall be checked and adjusted using the sand cone method as described in paragraph Calibration of the ASTM publication. ASTM D 2922 results in a wet unit weight of soil and when using this method, ASTM D 3017 shall be used to determine the moisture content of the soil. The calibration curves furnished with the moisture gauges shall be checked along with density calibration checks as described in ASTM D 3017. The calibration checks of both the density and moisture gauges shall be made at the beginning of a job, on each different type of material encountered, at intervals as directed by the Contracting Officer or a minimum of one sand cone density calibration test for every five nuclear gage tests. Copies of calibration curves, results of calibration tests, and field and laboratory density tests shall be furnished to the Contracting Officer. Trenches improperly compacted shall be reopened to the depth directed, then refilled and compacted to the density specified at no additional cost to the Government.

3.4.4 Displacement of Sewers

After other required tests have been performed and the trench backfill compacted to 2 feet above the top of the pipe, the pipe shall be inspected to determine whether significant displacement has occurred. This inspection shall be conducted in the presence of the Contracting Officer. Pipe pipe shall be inspected by shining a light or laser between manholes or manhole locations, or by the use of television cameras passed through the pipe. If, in the judgement of the Contracting Officer, the interior of the pipe shows poor alignment or any other defects that would cause improper functioning of the system, the defects shall be remedied as directed at no additional cost to the Government.

-- End of Section --

SECTION 16370A

ELECTRICAL DISTRIBUTION SYSTEM, AERIAL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C29.1	(1988; R 1996) Electrical Power Insulators - Test Methods
ANSI C29.2	(1992) Insulators - Wet-Process Porcelain and Toughened Glass - Suspension Type
ANSI C29.5	(1984; R 1995) Wet-Process Porcelain Insulators - Low- and Medium-Voltage Types
ANSI C29.6	(1996) Wet-Process Porcelain Insulators - High-Voltage Pin Type
ANSI C29.8	(1985; R 1995) Wet-Process Porcelain Insulators - Apparatus, Cap and Pin Type
ANSI C29.9	(1983; R 1996) Wet-Process Porcelain Insulators - Apparatus, Post-Type
ANSI C135.1	(1979) Galvanized Steel Bolts and Nuts for Overhead Line Construction
ANSI C135.2	(1999) Threaded Zinc-Coated Ferrous Strand-Eye Anchor Rods and Nuts for Overhead Line Construction
ANSI C135.4	(1987) Zinc-Coated Ferrous Eyebolts and Nuts for Overhead Line Construction
ANSI C135.14	(1979) Staples with Rolled or Slash Points for Overhead Line Construction
ANSI C135.22	(1988) Zinc-Coated Ferrous Pole-Top Insulator Pins with Lead Threads for Overhead Line Construction
ANSI O5.1	(1992) Specifications and Dimensions for Wood Poles

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM A 123/A 123M	(2000) Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products

ASTM A 153/A 153M	(2000) Zinc Coating (Hot-Dip) on Iron and Steel Hardware
ASTM A 575	(1996) Steel Bars, Carbon, Merchant Quality, M-Grades
ASTM A 576	(1990b; R 1995el) Steel Bars, Carbon, Hot-Wrought, Special Quality
ASTM B 8	(1999) Concentric-Lay-Stranded Copper Conductors, Hard, Medium-Hard, or Soft
ASTM B 117	(1997) Operating Salt Spray (Fog) Apparatus
ASTM D 1654	(1992) Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments

AMERICAN WOOD-PRESERVERS' ASSOCIATION (AWPA)

AWPA C25	(1995) Sawn Crossarms - Preservative Treatment by Pressure Processes

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2	(1997) National Electrical Safety Code
IEEE C37.34	(1994) Test Code for High-Voltage Air Switches
IEEE C37.41	(1994; C37.41c) Design Tests for High-Voltage Fuses, Distribution Enclosed Single-Pole Air Switches, Fuse Disconnecting Switches, and Accessories
IEEE C57.19.00	(1991; R 1997) IEEE Standard General Requirements and Test Procedures for Outdoor Power Apparatus Bushings
IEEE C57.19.01	(1991; R 1997) Standard Performance Characteristics and Dimensions for Outdoor Apparatus Bushings
IEEE C62.1	(1989; R 1994) Surge Arresters for AC Power Circuits
IEEE C62.2	(1987; R 1994) Guide for the Application of Gapped Silicon-Carbide Surge Arresters for Alternating Current Systems
IEEE C62.11	(1999) IEEE Standard Metal-Oxide Surge Arresters for AC Power Circuits
IEEE Std 81	(1983) Guide for Measuring Earth Resistivity, Ground Impedance, and Earth Surface Potentials of a Ground System (Part 1)

IEEE Std 100	(1997) IEEE Standard Dictionary of Electrical and Electronics Terms

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION (NEMA)

NEMA HV 2	(1984; R 1991) Application Guide for Ceramic Suspension Insulators
NEMA LA 1	(1992) Surge Arresters
NEMA SG 2	(1993) High Voltage Fuses

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70	(2002) National Electrical Code

U.S. DEPARTMENT OF AGRICULTURE (USDA)

RUS REA Bull 1728H-701	(1993) REA Specification for WopdCrossarms (Solid and Laminated), Transmission Timbers and Pole Keys

UNDERWRITERS LABORATORIES (UL)

UL 467	(1993; Rev thru Apr 1999) Grounding and Bonding Equipment

1.2 GENERAL REQUIREMENTS

1.2.1 Terminology

Terminology used in this specification is as defined in IEEE Std 100.

1.2.2 Service Conditions

Items provided under this section shall be specifically suitable for the following service conditions.

a. Altitude 5,000

b. Ambient Temperature 102

c. Frequency 60 Hz

d. Seismic Parameters 2

1.3 SUBMITTALS

Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government. The following shall be submitted in accordance with Section 01330 SUBMITTAL PROCEDURES:

SD-02 Shop Drawings

Electrical Distribution System

Detail drawings consisting of equipment drawings, illustrations,

schedules, instructions, diagrams and other information necessary to define the installation and enable the Government to check conformity with the requirements of the contract drawings. Detail drawings shall as a minimum include:

a. Fused Cutouts, Fused Switches.

b. Conductors.

c. Insulators.

d. Surge arresters.

If departures from the contract drawings are deemed necessary by the Contractor, complete details of such departures shall be submitted with the detail drawings. Approved departures shall be made at no additional cost to the Government.

Detail drawings shall show how components are assembled, function together and how they will be installed on the project. Data and drawings for component parts of an item or system shall be coordinated and submitted as a unit. Data and drawings shall be coordinated and included in a single submission. Multiple submissions for the same equipment or system are not acceptable except where prior approval has been obtained from the CONTRACTING OFFICER'S REPRESENTATIVE. In such cases, a list of data to be submitted later shall be included with the first submission. Detail drawings shall consist of the following:

a. Detail drawings showing physical arrangement, construction details, connections, finishes, materials used in fabrication, provisions for conduit or busway entrance, access requirements for installation and maintenance, physical size, electrical characteristics, foundation and support details, and equipment weight. Drawings shall be drawn to scale and/or dimensioned. Optional items shall be clearly identified as included or excluded.

b. Internal wiring diagrams of equipment showing wiring as actually provided for this project. External wiring connections shall be clearly identified.

As-Built Drawings

The as-built drawings shall be a record of the construction as installed. The drawings shall include the information shown on the contract drawings as well as deviations, modifications, and changes from the contract drawings, however minor. The as-built drawings shall be kept at the job site and updated daily. The as-built drawings shall be a full sized set of prints marked to reflect deviations, modifications, and changes. The as-built drawings shall be complete and show the location, dimensions, part identification, and other information. Additional sheets may be added. The as-built drawings shall be jointly inspected for accuracy and completeness by the Contractor's quality control representative and by the CONTRACTING OFFICER'S REPRESENTATIVE prior to the submission of each monthly pay estimate. Upon completion of the work, the Contractor shall submit three full sized sets of the marked prints to the CONTRACTING OFFICER'S REPRESENTATIVE for approval. If upon review, the as-built

drawings are found to contain errors and/or omissions, they will be returned to the Contractor for correction. The Contractor shall correct and return the as-built drawings to the CONTRACTING OFFICER'S REPRESENTATIVE for approval within ten calendar days from the time the drawings are returned to the Contractor.

SD-06 Test Reports

Factory Tests

Certified factory test reports shall be submitted when the manufacturer performs routine factory tests, including tests required by standards listed in paragraph REFERENCES. Results of factory tests performed shall be certified by the manufacturer, or an approved testing laboratory, and submitted within 7 days following successful completion of the tests specified in applicable publications or in these specifications.

Field Testing

A proposed field test plan 20 days prior to testing the installed system. No field test shall be performed until the test plan is approved. The test plan shall consist of complete field test procedures including tests to be performed, test equipment required, and tolerance limits.

Operating Tests; G

Six copies of the information described below in 8-1/2 by 11 inch binders having a minimum of 5 rings, and including a separate section for each test. Sections shall be separated by heavy plastic dividers with tabs.

a. A list of equipment used, with calibration certifications.

b. A copy of measurements taken.

c. The dates of testing.

d. The equipment and values to be verified.

e. The condition specified for the test.

f. The test results, signed and dated.

g. A description of adjustments made.

SD-07 Certificates

Material and Equipment

Where materials or equipment are specified to conform to the standards of the Underwriters Laboratories (UL) or to be constructed or tested, or both, in accordance with the standards of the American National Standards Institute (ANSI), the Institute of Electrical and Electronics Engineers (IEEE), or the National Electrical Manufacturers Association (NEMA), the Contractor shall submit proof that the items provided under this section of the specifications conform to such requirements. The label of, or

listing by, UL will be acceptable as evidence that the items conform thereto. Either a certification or a published catalog specification data statement, to the effect that the item is in accordance with the referenced ANSI or IEEE standard, will be acceptable as evidence that the item conforms thereto. A similar certification or published catalog specification data statement to the effect that the item is in accordance with the referenced NEMA standard, by a company listed as a member company of NEMA, will be acceptable as evidence that the item conforms thereto. In lieu of such certification or published data, the Contractor may submit a certificate from a recognized testing agency equipped and competent to perform such services, stating that the items have been tested and that they conform to the requirements listed, including methods of testing of the specified agencies.

SD-10 Operation and Maintenance Data

Electrical Distribution System

Six copies of Operation and Maintenance manuals electrical distribution system shall be provided, within 7 calendar days following the completion of tests and shall include assembly, installation, operation and maintenance instructions, spare parts data which provides supplier name, current cost, catalog order number, and a recommended list of spare parts to be stocked. Manuals shall also include data outlining detailed procedures for system startup and operation, and a troubleshooting guide which lists possible operational problems and corrective action to be taken. A brief description of all equipment, basic operating features, and routine maintenance requirements shall also be included. Documents shall be bound in a binder marked or identified on the spine and front cover. A table of contents page shall be included and marked with pertinent contract information and contents of the manual. Tabs shall be provided to separate different types of documents, such as catalog ordering information, drawings, instructions, and spare-parts data. Index sheets shall be provided for each section of the manual when warranted by the quantity of documents included under separate tabs or dividers. Three additional copies of the instructions manual shall be provided within 30 calendar days following the manuals.

Three additional copies of the instructions manual within 30 calendar days following the approval of the manuals.

1.4 DELIVERY, STORAGE, AND HANDLING

Devices and equipment shall be visually inspected by the Contractor when received and prior to acceptance from conveyance. Stored items shall be protected from the environment in accordance with the manufacturer's published instructions. Damaged items shall be replaced. Oil filled transformers and switches shall be stored in accordance with the manufacturer's requirements. Wood poles held in storage for more than 2 weeks shall be stored in accordance with ANSI O5.1. Handling of wood poles shall be in accordance with ANSI O5.1, except that pointed tools capable of producing indentations more than inch in depth shall not be used. Metal poles shall be handled and stored in accordance with the manufacturer's instructions.

1.5 EXTRA MATERIALS

One additional spare fuse or fuse element for each furnished fuse or fuse element shall be delivered to the CONTRACTING OFFICER'S REPRESENTATIVE when the electrical system is accepted. Two complete sets of all special tools required for maintenance shall be provided, complete with a suitable tool box. Special tools are those that only the manufacturer provides, for special purposes (to access compartments, or operate, adjust, or maintain special parts).

PART 2 PRODUCTS

2.1 GENERAL REQUIREMENTS

Products shall conform to the following requirements. Items of the same classification shall be identical including equipment, assemblies, parts, and components.

2.2 STANDARD PRODUCT

Material and equipment shall be the standard product of a manufacturer regularly engaged in the manufacture of the product and shall essentially duplicate items that have been in satisfactory use for at least 2 years prior to bid opening.

2.3 NAMEPLATES

2.3.1 General

Each major component shall have the manufacturer's name, address, type or style, model or serial number, and catalog number on a nameplate securely attached to the equipment. Nameplates shall be made of noncorrosive metal. As a minimum, nameplates shall be provided for switches, cut-outs.

2.4 CORROSION PROTECTION

2.4.1 Aluminum Materials

Aluminum shall not be used.

2.4.2 Ferrous Metal Materials

2.4.2.1 Hardware

Ferrous metal hardware shall be hot-dip galvanized in accordance with ASTM A 153/A 153M and ASTM A 123/A 123M.

2.4.2.2 Equipment

Equipment and component items, including but not limited to transformers and ferrous metal luminaires not hot-dip galvanized or porcelain enamel finished, shall be provided with corrosion-resistant finishes which shall withstand 120 hours of exposure to the salt spray test specified in ASTM B 117 without loss of paint or release of adhesion of the paint primer coat to the metal surface in excess of 1/16 inch from the test mark. The described test mark and test evaluation shall be in accordance with ASTM D 1654 with a rating of not less than 7 in accordance with TABLE 1, (procedure A). Cut edges or otherwise damaged surfaces of hot-dip galvanized sheet steel or mill galvanized sheet steel shall be coated with

a zinc rich paint conforming to the manufacturer's standard.

2.4.3 Finishing

Painting required for surfaces not otherwise specified and finish painting of items only primed at the factory shall be as specified in Section 09900 PAINTING, GENERAL.

2.5 POLES HARDWARE

2.5.1 Pole Line Hardware

Zinc-coated hardware shall comply with ANSI C135.1, ANSI C135.2, ANSI C135.4, ANSI C135.14 ANSI C135.22. Steel hardware shall comply with ASTM A 575 and ASTM A 576. Hardware shall be hot-dip galvanized in accordance with ASTM A 153/A 153M. Pole-line hardware shall be hot-dip galvanized steel. Washers shall be installed under boltheads and nuts on wood surfaces and elsewhere as required. Washers used on through-bolts and double-arming bolts shall be approximately 2-1/4 inches square and 3/16 inch thick. The diameter of holes in washers shall be the correct standard size for the bolt on which a washer is used. Washers for use under heads of carriage-bolts shall be of the proper size to fit over square shanks of bolts. Eye bolts, bolt eyes, eyenuts, strain-load plates, lag screws, guy clamps, fasteners, hooks, shims, and clevises shall be used wherever required to support and to protect poles, brackets, crossarms, guy wires, and insulators.

2.5.2 Armless Construction

Pole mounting brackets for line-post or pin insulators and eye bolts for suspension insulators shall be as shown. Brackets shall be attached to poles with a minimum of two bolts. Brackets may be either provided integrally as part of an insulator or attached to an insulator with a suitable stud. Bracket mounting surface shall be suitable for the shape of the pole. Brackets for wood poles shall have wood gripping members. Horizontal offset brackets shall have a 5-degree uplift angle. Pole top brackets shall conform to ANSI C135.22, except for modifications necessary to provide support for a line-post insulator. Brackets shall provide a strength exceeding that of the required insulator strength, but in no case less than a 2800 pound cantilever strength.

2.6 INSULATORS

Insulators shall comply with NEMA HV 2 for general requirements. Suspension insulators shall be used at corners, angles, dead-ends, other areas where line insulators do not provide adequate strength, and as indicated. Mechanical strength of suspension insulators and hardware shall exceed the rated breaking strength of the attached conductors.

2.6.1 Medium-Voltage Line Insulators

Medium-voltage line insulators shall comply with ANSI C29.2, ANSI C29.5, and ANSI C29.6, and as applicable. Ratings shall not be lower than the ANSI classes indicated in TABLE I. Horizontal line-post insulators shall be used for armless construction and shall have the same mechanical and electrical ratings as vertical line-post insulators for the ANSI class indicated, but shall be modified to be suitable for horizontal installation. Where line-post insulators are used for angles greater than 15 degrees, clamp-top fittings shall be provided as well as for other locations shown. Conductor clamps for use with clamp-top, line-post

insulators shall be hot-dip galvanized malleable iron for copper conductors and aluminum alloy for aluminum-composition conductors. Either line-post or pin insulators may be used for crossarm construction. Pin insulators for use on voltages in excess of 6 kV phase-to-phase shall be radio-interference-freed or else line-post insulators shall be used.

TABLE I

MINIMUM ANSI RATING OF MEDIUM-VOLTAGE INSULATORS BY CLASS

Voltage Level	Line-Post	Pin	Suspension
Up to 5 kV	57-1 or 11	55-3	One 52-1
	57-1 or 11	55-5	Two 52-1
6 kV to 15 kV	57-1 or 11	55-5	Two 52-2
	57-2 or 12	56-3	Two 52-3 or 4
16 kV to 25 kV	57-2 or 12	56-3	Two 52-3 or 4
	57-3 or 13	56-4	Three 52-3 or 4
26 kV to 35 kV	57-3 or 13	56-4	Three 52-3 or 4
	57-4 or 14	56-5	Four 52-3 or 4

2.6.2 Apparatus Insulators

Apparatus insulators shall comply with IEEE C57.19.00, IEEE C57.19.01, ANSI C29.8, and ANSI C29.9 as applicable.

2.7 CROSSARM ASSEMBLIES

2.7.1 Crossarms

Crossarms shall comply with RUS REA Bull 1728H-701 and shall be solid wood, distribution type, except cross-sectional area with pressure treatment conforming to AWPA C25, and a 1/4 inch, 45 degree chamfer on all top edges. Cross-sectional area minimum dimensions shall be 4-1/4 inches in height by 3-1/4 inches in depth in accordance with IEEE C2 for Grade B construction. Crossarms shall be 8 feet in length, except that 10 foot crossarms shall be used for crossarm-mounted banked single-phase transformers or elsewhere as indicated. Crossarms shall be machined, chamfered, trimmed, and bored for stud and bolt holes before pressure treatment. Factory drilling shall be provided for pole and brace mounting, for four pin or four vertical line-post insulators, and for four suspension insulators, except where otherwise indicated or required. Drilling shall provide required climbing space and wire clearances. Crossarms shall be straight and free of twists to within 1/10 inch per foot of length. Bend or twist shall be in one direction only.

2.8 FUSES AND SWITCHES, MEDIUM-VOLTAGE

2.8.1 Fuse Cutouts

Medium-voltage fuses and cutouts shall comply with NEMA SG 2 and shall be of the loadbreak open type construction rated 15 kV and of the extra-heavy-duty type ratings and types indicated. Open-link cut-outs are not acceptable. Fuses shall be either indicating or dropout type. Fuse ratings shall be as indicated. Fuse cutouts shall be equipped with mounting brackets suitable for the indicated installations.

2.8.2 Fused Switches

Fused switches shall be single-pole, manual devices with integral power fuses of the dropout type. Fuse ratings shall be as indicated. Each switch shall have a continuous current rating as shown, a momentary asymmetrical current rating of 40 kA rms and shall be rated for the voltage of the system in which it is installed.

2.8.3 Nonfused Switches

Nonfused switches shall be single-pole, manual devices with a continuous current rating as shown, a momentary asymmetrical current rating of 70 kA rms, and shall be rated for the voltage of the system in which it is installed.

2.9 SURGE ARRESTERS

Surge arresters shall comply with NEMA LA 1 and IEEE C62.1, IEEE C62.2, and IEEE C62.11, and shall be provided for protection of aerial-to-underground transitions, automatic circuit reclosers, capacitor equipment, group-operated load-interrupter switches, transformers and other indicated equipment. Arresters shall be distribution class, rated as shown. Arresters for use at elevations in excess of 6000 feet above mean sea level shall be specifically rated for that purpose. Arresters shall be equipped with mounting brackets suitable for the indicated installations. Arresters shall be of the valve or metal-oxide varistor or combination valve-metal-oxide varistor type suitable for outdoor installations.

2.10 GROUNDING AND BONDING

2.10.1 Driven Ground Rods

Ground rods shall be of copper-clad steel conforming to UL 467 not less than 5/8 inch in diameter by 10 feet in length of the sectional type driven full length into the earth.

2.10.2 Grounding Conductors

Grounding conductors shall be bare, except where installed in conduit with associated phase conductors. Insulated conductors shall be of the same material as the phase conductors and green color-coded, except that conductors shall be rated no more than 600 volts. Bare conductors shall be ASTM B 8 soft-drawn unless otherwise indicated. Aluminum is not acceptable.

2.11 PADLOCKS

Padlocks shall comply with Section 08700 'Builders' Hardware.

2.12 WARNING SIGNS

Warning signs shall be porcelain enameled steel or approved equal. Voltage warning signs shall comply with IEEE C2.

2.13 FACTORY TESTS

Factory tests shall be performed, as follows, in accordance with the applicable publications and with other requirements of these specifications. The CONTRACTING OFFICER'S REPRESENTATIVE shall be notified

at least 10 days before the equipment is ready for testing.

a. High-Voltage Air Switches: Manufacturer's standard tests in accordance with IEEE C37.34 and IEEE C37.41.

f. High-Voltage Fuses: Manufacturer's standard tests in accordance with IEEE C37.41.

g. Electric Power Insulators: Manufacturer's standard tests in accordance with ANSI C29.1.

2.14 COORDINATED POWER SYSTEM PROTECTION

Analyses shall be prepared to demonstrate that the equipment selected and system constructed meet the contract requirements for equipment ratings, coordination, and protection. They shall include a load flow analysis, a fault current analysis, and a protective device coordination study. The studies shall be performed by a registered professional engineer with demonstrated experience in power system coordination in the last three years. The Contractor shall provide list of references complete with points of contact, address and telephone numbers. The selection of the engineer is subject to the approval of the CONTRACTING OFFICER'S REPRESENTATIVE.

2.14.1 Scope of Analyses

The fault current analysis, and protective device coordination study shall begin at: the source bus and extend down to system buses where fault availability is 10,000 amperes (symmetrical) for building/facility 600 volt level distribution buses.

2.14.2 Determination of Facts

The time-current characteristics, features, and nameplate data for each existing protective deice shall be determined and documented. The Contractor shall coordinate with the CONTRACTING OFFICER'S REPRESENTATIVE for fault current availability at the site.

2.14.3 Single Line Diagram

A single line diagram shall be prepared to show the electrical system buses, devices, transformer points, and all sources of fault current (including generator and motor contributions). A fault-impedance diagram or a computer analysis diagram may be provided. Each bus, device or transformer point shall have a unique identifier. If a fault-impedance diagram is provided, impedance data shall be shown. Locations of switches, breakers, and circuit interrupting devices shall be shown on the diagram together with available fault data, and the device interrupting rating.

PART 3 EXECUTION

3.1 GENERAL INSTALLATION REQUIREMENTS

Equipment and devices shall be installed and energized in accordance with the manufacturer's published instructions.

3.1.1 Conformance to Codes

The installation shall comply with the requirements and recommendations of

IEEE C2 for medium loading districts, Grade B construction. No reduction in clearance shall be made. The installation shall also comply with the applicable parts of NFPA 70.

3.1.2 Verification of Dimensions

The Contractor shall become familiar with details of the work, shall verify dimensions in the field, and shall notify the CONTRACTING OFFICER'S REPRESENTATIVE of any discrepancy before performing any work.

3.2 CONNECTIONS TO UTILITY LINES

The Contractor shall coordinate the work with the CONTRACTING OFFICER'S REPRESENTATIVE and shall provide for final connections to the utility installation electric lines.

3.3 CONNECTIONS BETWEEN AERIAL AND UNDERGROUND SYSTEMS

Connections between aerial and underground systems shall be made as shown. Underground cables shall be extended up poles in conduit to cable terminations. Conduits shall be secured to poles by conduit supports spaced not more than 10 feet apart and with one support not more than 12 inches from any bend or termination. Cables shall be supported by devices separate from the conduit or guard, near their point of exit from the riser conduit or guard. Cables guards shall be secured in accordance with the manufacturers published procedure. Risers shall be equipped with bushings to protect cables. Capnut potheads shall be used to terminate medium-voltage multiple-conductor cable.

3.3.1 Connectors and Splices

Connectors and splices shall be mechanically and electrically secure under tension and shall be of the nonbolted compression type. The tensile strength of any splice shall be not less than the rated breaking strength of the conductor. Splice materials, sleeves, fittings, and connectors shall be noncorrosive and shall not adversely affect conductors. Aluminum-composition conductors shall be wire brushed and an oxide inhibitor applied before making a compression connection. Connectors which are factory-filled with an inhibitor are acceptable. Inhibitors and compression tools shall be of types recommended by the connector manufacturer. Primary line apparatus taps shall be by means of hot line clamps attached to compression type bail clamps (stirrups). Low-voltage connectors for copper conductors shall be of the solderless pressure type. Noninsulated connectors shall be smoothly taped to provide a waterproof insulation equivalent to the original insulation, when installed on insulated conductors. On overhead connections of aluminum and copper, the aluminum shall be installed above the copper.

3.4 GROUNDING

Noncurrent-carrying metal parts of equipment and conductor assemblies, such as luminaires, medium-voltage cable terminations and messengers, operating mechanisms of pole top switches, panel enclosures, and other noncurrent-carrying metal items shall be grounded. Additional grounding of equipment, neutral, and surge arrester grounding systems shall be installed at poles where indicated.

3.4.1 Grounding Electrodes

Grounding electrodes shall be installed as follows:

a. Driven rod electrodes - Unless otherwise indicated, ground rods shall be located approximately 3 feet out from base of the pole and shall be driven into the earth until the tops of the rods are approximately 1 foot below finished grade. Multiple rods shall be evenly spaced at least 10 feet apart and connected together 2 feet below grade with a minimum No. 6 bare copper conductor.

b. Pole butt electrodes - Pole butt electrodes shall be installed where indicated, except that this method shall not be the sole grounding electrode at transformer locations. The pole butt electrode shall consist of a coil of at least 12 feet of minimum No. 6 bare copper conductor stapled to the butt of the pole.

c. Plate electrodes - Plate electrodes shall be installed in accordance with the manufacturer's instructions and IEEE C2 and NFPA 70.

d. Ground Resistance - The maximum resistance of a driven ground rod shall not exceed 25 ohms under normally dry conditions. Whenever the required ground resistance is not met, provide additional electrodes interconnected with grounding conductors, to achieve the specified ground resistance. The additional electrodes will be up to three, 10feet rods spaced a minimum of 10 feet apart, 5/8 inch diameter, up to 30 feet long, driven perpendicular to grade coupled and driven with the first rod. In high ground resistance, UL listed chemically charged ground rods may be used. If the resultant resistance exceeds 25 ohms measured not less than 48 hours after rainfall, the CONTRACTING OFFICER'S REPRESENTATIVE shall be notifies immediately. Connections below grade shall be fusion welded. Connections above grade shall be fusion welded or shall use UL 467 approved connectors.

3.4.2 Grounding and Bonding Connections

Connections above grade shall be made by the fusion-welding process or with bolted solderless connectors in compliance with UL 467, and those below grade shall be made by a fusion-welding process. Where grounding conductors are connected to aluminum-composition conductors, specially treated or lined copper-to-aluminum connectors suitable for this purpose shall be used.

3.5 FIELD TESTING

3.5.1 General

Field testing shall be performed in the presence of the CONTRACTING OFFICER'S REPRESENTATIVE. The Contractor shall notify the CONTRACTING OFFICER'S REPRESENTATIVE 5 days prior to conducting tests. The Contractor shall furnish materials, labor, and equipment necessary to conduct field tests. The Contractor shall perform tests and inspections recommended by the manufacturer unless specifically waived by the CONTRACTING OFFICER'S REPRESENTATIVE. The Contractor shall maintain a written record of tests which includes date, test performed, personnel involved, devices tested, serial number and name of test equipment, and test results. Field reports will be signed and dated by the Contractor.

3.5.2 Safety

The Contractor shall provide and use safety devices such as rubber gloves, protective barriers, and danger signs to protect and warn personnel in the test vicinity. The Contractor shall replace any devices or equipment which are damaged due to improper test procedures or handling.

3.5.3 Ground-Resistance Tests

The resistance of each grounding electrode system shall be measured using the fall-of-potential method defined in IEEE Std 81. Ground resistance measurements shall be made before the electrical distribution system is energized and shall be made in normally dry conditions not less than 48 hours after the last rainfall. Resistance measurements of separate grounding electrode systems shall be made before the systems are bonded together below grade. The combined resistance of separate systems may be used to meet the required resistance, but the specified number of electrodes shall be provided.

3.5.4 Pre-Energization Services

The following services shall be performed on the equipment listed below. These services shall be performed subsequent to testing but prior to the initial energization. The equipment shall be inspected to insure that installation is in compliance with the recommendations of the manufacturer and as shown on the detail drawings. Terminations of conductors at major equipment shall be inspected to ensure the adequacy of connections. Bare and insulated conductors between such terminations shall be inspected to detect possible damage during installation. If factory tests were not performed on completed assemblies, tests shall be performed after the installation of completed assemblies. Components shall be inspected for damage caused during installation or shipment and to ensure that packaging materials have been removed. Components capable of being both manually and electrically operated shall be operated manually prior to the first electrical operation. Components capable of being calibrated, adjusted, and tested shall be calibrated, adjusted, and tested in accordance with the instructions of the equipment manufacturer. Items for which such services shall be provided, but are not limited to, are the following:

Automatic circuit reclosers.

Switches.

Transformers.

3.5.5 Operating Tests

After the installation is completed, and at such time as the CONTRACTING OFFICER'S REPRESENTATIVE may direct, the Contractor shall conduct operating tests for approval. The equipment shall be demonstrated to operate in accordance with the specified requirements. An operating test report shall be submitted in accordance with paragraph SUBMITTALS.

3.6 MANUFACTURER'S FIELD SERVICE

3.6.1 Onsite Training

The Contractor shall conduct a training course for the operating staff as designated by the CONTRACTING OFFICER'S REPRESENTATIVE. The training period shall consist of a total of 4 hours of normal working time and shall

start after the system is functionally completed but prior to final acceptance tests. The course instruction shall cover pertinent points involved in operating, starting, stopping, servicing the equipment, as well as all major elements of the operation and maintenance manuals. Additionally, the course instructions shall demonstrate all routine maintenance operations. A VHS format video tape of the entire training session shall be submitted.

3.6.2 Installation Engineer

After delivery of the equipment, the Contractor shall furnish one or more field engineers, regularly employed by the equipment manufacturer to supervise the installation of the equipment, assist in the performance of the onsite tests, initial operation, and instruct personnel as to the operational and maintenance features of the equipment.

3.7 ACCEPTANCE

Final acceptance of the facility will not be given until the Contractor has successfully completed all tests and after all defects in installation, material or operation have been corrected.

-- End of Section --